CONSERVATION AND SUSTAINABLE USE OF THE MESOAMERICAN BARRIER REEF SYSTEMS PROJECT (MBRS)

SAM / MBRS

User Manual

for the

Regional Environmental Information System

Volume I : Introduction

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1. INTRODUCTION

The Mesoamerican Barrier Reef System (MBRS) is the largest barrier reef system in the Caribbean and the second largest reef system in the world. The primary goal of the MBRS project is to enhance protection of these valuable ecosystems. Key to any protection strategy is knowledge of the habitats and the various uses of those habitats. Management decisions need to be based on information of the system. While there may be many efforts to monitor, study, and manage individual portions of the MBRS a system wide overview of the information available is essential for management of the MBRS as a whole unit. Collecting all of the disparate information and compiling it into one easily accessible database is the goal of the Regional Environmental Information System (REIS). The design of the database is based on the information that is to be collected, or has been collected in the past.

The data are stored in PostgreSQL 7.3.2 on a Dell Server running Red Hat Linux Version 8.2. Access to the data will be through a web interface running on Apache web server and using PHP. This design is to allow easy data entry access and querying to researchers throughout the 4 countries served by the MBRS Project.

The driving philosophy behind the database design was to have an efficient, normalized database that would be easy to maintain and expand, as well as allow easy data entry and access.

Based on this goal the database is set up to be accessed by web browsers over the internet. The entire database is accessible through web pages that can be accessed via a link from the MBRS website. These web pages have been tested with Internet Explorer, Netscape Navigator, and Mozilla. Other web browsers should also work, however, some of the formatting may not appear correctly.

2. DATABASE DESIGN PROCESS

The first step in the database design was to analyze the data that would be collected and the expected uses of the data.

For consistency, each data group is defined as a group of related data tables. Data from one or more surveys may be included in a group. Analysis of the datasheets and data collection methods identified several different data groups. The groups are:

Mangrove monitoring

Seagrass monitoring

Coral Reef Monitoring

Pollution monitoring

Oceanographic monitoring

Marine Protected Areas

The commonalities between the datasheets within each group where identified. These commonalities would be in one table, to which all of the other tables in the group would be linked. This would provide a connection between the various tables within a group.

To aid in the management of the data and tables, each table would have at least one field that contained a unique identifier for that record, a field to identify who was doing the data entry, and another field to track when the data was entered. In most cases these fields are hidden from the user and are updated automatically by the system. This information is accessible by the administrator for troubleshooting purposes. All values that require measurements such as lengths, weights, temperature, salinity, etc are set up to allow only the precision at which the parameter is measured. If the level of precision is unknown then it is set to 3 decimal places.

The following section will give a brief outline of the database design. Detailed descriptions for all of the fields visible to the user are included in Chapter 1 Data Entry section of Volume 2 - 5 of the manual. The overall design of the database is based on the information in the *Manual of Methods for the MBRS Synoptic Monitoring Program*. The data forms in the manual where the primary source material for designing the database, tables, and input forms. This information was supplemented by interviews with MBRS staff, potential end users, and other personnel that help create the Synoptic Monitoring Program (SMP) Manual.

The input forms are designed with the expectation that data would be entered into the database from data sheets based on the data sheets in the SMP Manual. The user will collect the data in the field and record the information on to the data sheets, as per the SMP Manual protocols. These completed datasheets are then brought back to the office and the data is entered directly from the data sheets into the web-based forms. Restrictions on values that can be entered and whether duplicate values can be entered are based on the protocols of the SMP Manual.

2.1 Common Tables

There are a group of base tables that are used throughout the database. These tables are common to some or most of the groups listed.

Site Table

At the highest level is the site information. The site table was created to store general information for the site. This is one of the smallest tables, yet it provides a spatial reference to all of the data in the database. In the event that a GIS system is used this table can be used as a link between the locational information and the data. The system administrator enters the data for the sites. All of the data entered by the users is linked back to this table, on the field *site_id*. A brief description of the fields in the table are given in Table 1.3.1 in Volume 5 of the manual.

Survey Table

One level down from the **site** table is the **survey** table. This table is linked to the **site** table via the *site_id* value. This table is used across all of the groups and contains the detailed, survey specific information such as time, date, sampler, weather conditions, lab providing analysis, etc. This design allows the site information to be entered only once, regardless of how often a site is visited during the course of the project. All of the specific data collection tables are linked to this table through the **transect** table and the *survey_id* field. *Survey_id* is automatically added by the database when a new survey record is entered. The **survey** table has one entry for each separate dataset (i.e. point intercept benthic survey and benthic coral survey) every time a site is surveyed. There is a one-to-many relationship between the **site** table and the **survey** table.

The various survey datasheets in the SMP Manual are each given their own table, and are related back to the **survey** table. Multiple data sheets may relate back to one **survey** table entry. With this design the user needs to enter the survey date, time, hydrologic, and meteorological conditions only once for each survey.

Transect

The **survey** table records all of the information that is collected once per each site visit. In addition to the survey information a table is needed to keep track of transects or plots at each survey site. The information recorded for each transect or plot is usually limited to start times and person. Therefore, a separate table was created for each transect or plot that serves as a link between the detailed data collected and the survey record. An entry is required in this table for every site or transect or plot that is completed. The system assigns each entry in this table a unique number called *transect_id.* All of the datasheets link to this table on this number. Even if there is only one sampling conducted for a site, and no transect or plots are used an entry is still required in this table, with a transect number of 1. The water quality and pollution sampling forms do not have an associated transect. They are linked directly to the **survey** table.

Person

The **person** table is a lookup table that provides an authoritative list of names of the people and their agency that are registered to collect data for the project. This table is related to the columns *person_col* and *person_proc* in **survey** table or *person*_col in **transect** table on *person_id*. The list of names in the pull down menu for person collecting or person processing is obtained from this table. Optionally this table could be expanded to include more information for the individual than just the name and agency. This table is maintained by the database administrator.

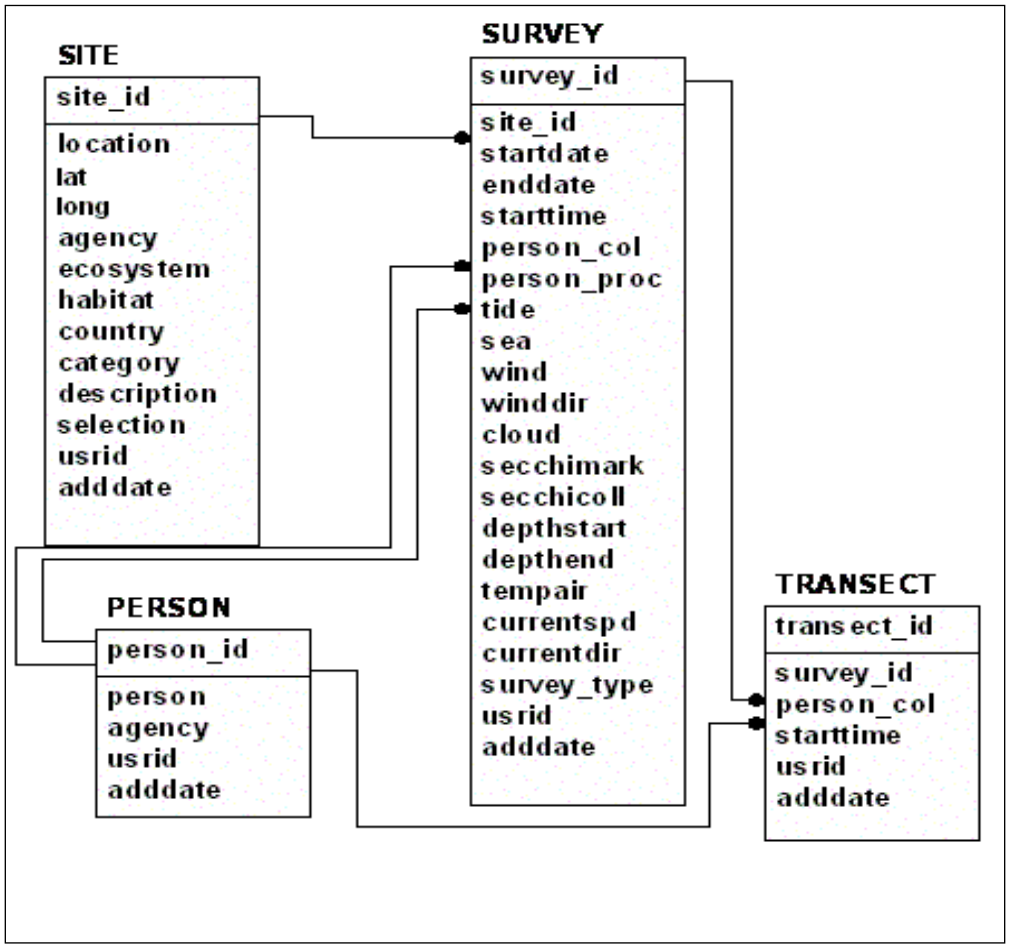

FIGURE 2.1 Entity relationship diagram of common tables.

2.2 Species List

Several tables are required to create an efficient species list. Since this database is being used in several countries and in 2 languages, there could be a problem keeping track of common names and threatened and endangered status of various species. The names and status change from country to country, and may even be different within different regions of a country. Therefore these features have been broken out into separate tables to accommodate the potential variety. These tables are the basis for all the species names in the database. No species name can be entered into any of the forms that is not present in this database.

Species

The species table is the basis of all the species information. At present it only contains the scientific name (Genus and species), family, order, class and broad taxonomic classification such as bird, fish, invertebrate, etc. It is hoped that it will be able to be expanded to accommodate the full taxonomic information for each species. All of the forms that require species names to be entered get the list of names from this table. The broad taxonomic classification is used to restrict the selected list of species to what is appropriate for the form being filled out. Therefore only coral species will be shown on the list for the coral forms, and only fish species will be shown on the list for the adult fish forms. This table is maintained by the database administrator. If species need to be added to the list, the species information needs to be presented to the administrator. The administrator will then verify the information, ensure that it does not already exist in the database, then enter the data for the species.

Local Names

The table **localname** provides the local common name for the species. This table is designed to accommodate various local names based on countries or regions within a country. The information in this table includes the common name, what country that common name is used in, and if appropriate the region of the country. The local name is linked to the species table and the scientific name based on the *species_id*. This table is maintained by the database administrator.

Threatened and Endangered

The table **tande** identifies the threatened and endangered status of species. It includes the national ranking for each country as well as the IUCN Red Book listing. The only species included in this list are those that are listed as threatened or endangered in a country, or have and IUCN Red Book listing of critically endangered, endangered, or vulnerable. It is designed to accommodate different listing statuses based on country. This table is maintained by the database administrator.

2.3 Coral Reefs

As with mangroves there are numerous tables that are related to data collected at coral reef sites. The tables for **site** and **survey** are the same as for mangroves. Below are discussed the tables specific for coral reefs. The following tables are in the coral reef monitoring group: **benthic**, **pointintercept**, **benthiclut**, **adult**, **recruit**, **rover,** and **manta**. This is only a logical

assemblage of tables and is not physically set as an assemblage in the data structure. The common links for all of these tables is the *transect_id*. Therefore this group can be easily changed, by adding additional tables, or removing tables as needed. In all the tables that require species name, a *species_id* is stored in the data table that is linked to the **species** table identified above. This provides the flexibility of easily accommodating changes to the scientific or common names, if necessary, in the future. It also eliminates the possibility of misspelling a species name

Benthic Coral

The table **benthic** corresponds to the data form Benthic Data Entry Form in the SMP Manual. This table records the information for the various corals found along the survey transect. The table design has one row per coral record similar to the data entry form. In the SMP Manual the data sheet has a column for disease in which a code is entered for the disease. The data table uses nine columns for this information. There is a separate column for each type of disease. These are Boolean fields, meaning that all they hold is a true or false value. If the coral has the disease the box is checked and the value in the field is set to true. If the disease is not present the box is left blank and the value in the field is blank.

Point Intercept

The **pointintercept** table corresponds to the data form "Point Intercept Transect Data Entry Form" in the SMP Manual. The information in this table identifies the various types of substrate on the transect. The identifier in this table is the column *benthic_id*. This is an ID number that is linked to the table **benthiclut** which contains the names for the substrate. The input form, however, allows the user to pick the substrate by name, and the user does not have to know the *benthic_id* for each substrate. The information in this table is entered by transect, with the transect number being recorded in the transect table. This table is linked to the **transect** table on *transect_id.*

Benthiclut

This table is a lookup table with a list of all of the possible benthic components that would be used in the point intercept data sheet. It is related to the **pointintercept** table on *benthic_id*. This table is maintained by the database administrator.

Adult fish

The **adult** table records the information from the adult fish entry form. On the adult fish data entry form in the SMP Manual there is a row for each species that is to be counted. However, in the table only the species that were sighted and counted on the transect being surveyed are entered. If a species on the data sheet does not have a count associated with it for that survey and transect it is not entered into the table. As with all the other tables this table relates back to the **transect** table on *transect_id*.

Fish Recruitment

The fish recruitment table **recruit** is similar to the **adult** table in that only the species that have count information are entered into the database. A separate record in the **transect** table needs to be created for each column on the datasheet. After entering a transect record users only

need to enter species and count information into this table. This table is linked to the **transect** table on *transect_id*.

Rover Diver

The rover diver table **rover** is set up similar to the **recruit** table. Only species that are recorded on the survey are entered into the database. This setup minimizes the size of the table and allows for easy expansion of the species list that can be recorded in the table. Even though the rover diver is not based on a transect, for compatibility with the other tables in the group, a transect record still needs to be created before data can be entered into this table. The **rover** table is linked to the **transect** table on *transect_id*.

Manta Tow

The data table **manta** is used for the data collected on the manta tow data form. This table is set up to match the data form. Even though the manta tow is not done on a transect, for compatibility with the other tables in the group an entry has to be made into the **transect** table to be able to enter data into the **manta** table. The transect number in the transect table would be 1. Within the **manta** table there cannot be two entries with the same tow number for each transect.

The following page has the entity relationship diagram for corals and fish.

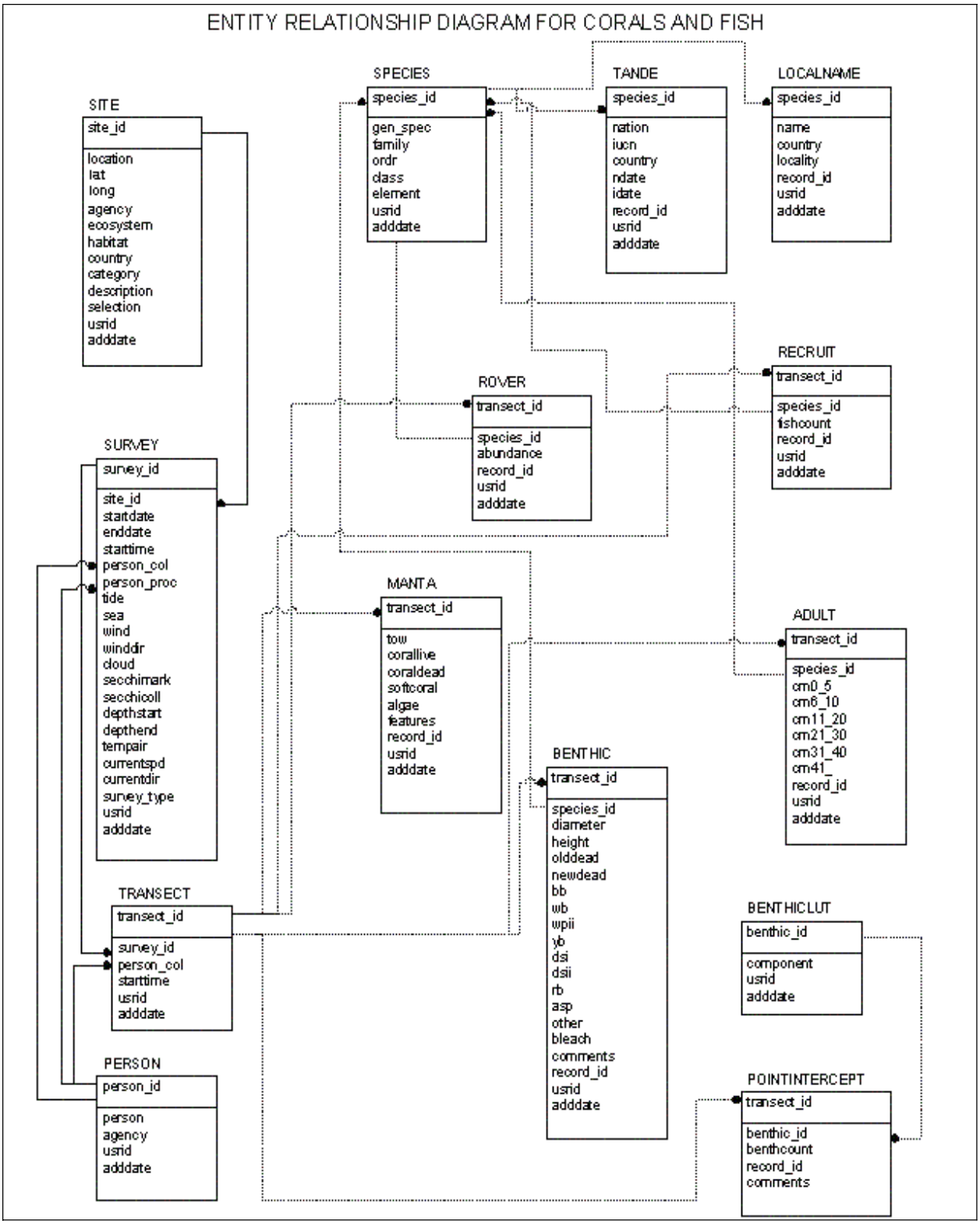

FIGURE 2.3 Entity relationship diagram for corals and fish

2.4 Mangroves

The following tables are in the mangrove monitoring group: **zonation**, **structure**, **seedling**, **seedlingbio**, **litter**, **interstitial**. This is only a logical assemblage of tables and is not physically set as an assemblage in the data structure. The common links for all of these tables is the *transect_id*. Therefore this group can be easily changed, by adding additional tables, or removing tables as needed. In all the tables that require species name, a *species_id* is stored in the data table that is linked to the **species** table identified above. This provides the flexibility of easily accommodating changes to the scientific or common names, if necessary, in the future. It also eliminates the possibility of misspelling a species name

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Forest structure

This data table is for recording the information for the forest structure. It is based on the forest structure spreadsheet. However, instead of trunk length, the form takes height to first branch as one of the fields. This was changed from the data sheet after consultation with several field biologists, since it was determined that the measurement actually made in the field is height to first branch. It is related to the **transect** table by the *transect_id* field. Since there may be numerous plots at one site, there would be one *transect_id* record for each plot. There would then be multiple entries in this table for each transect record. The value for *transect_id* is automatically entered by the program.

Leaf Litter

The litter table is based on the leaf litter data entry form. This is one of the forms that requires a start and end date. The start and end dates are entered in the **survey** table, and not in the **litter** table. There are two different forms for leaf litter, the monthly litter fall entry form and the surface litter entry from. This same table is used for both forms. For the surface litter entry form, the start date and end date would be the same.

Other mangrove tables

The remaining four mangrove tables are used for recording the information from the Mangrove structure seedling/sapling data entry sheet (**seedling** table), seedling biomass data entry sheet **(seedlingbio** table), interstitial water data entry sheet (**interstitial** table), and mangrove characterization/zonation data entry sheet (**zonation** table). These tables are related back to the **transect** table with *transect_id*. There is one record in the transect table for each plot. The setup of these tables is very similar to the paper data sheets and data entry is therefore almost identical to the paper form.

The following page is a simplified entity-relationship diagram for mangroves.

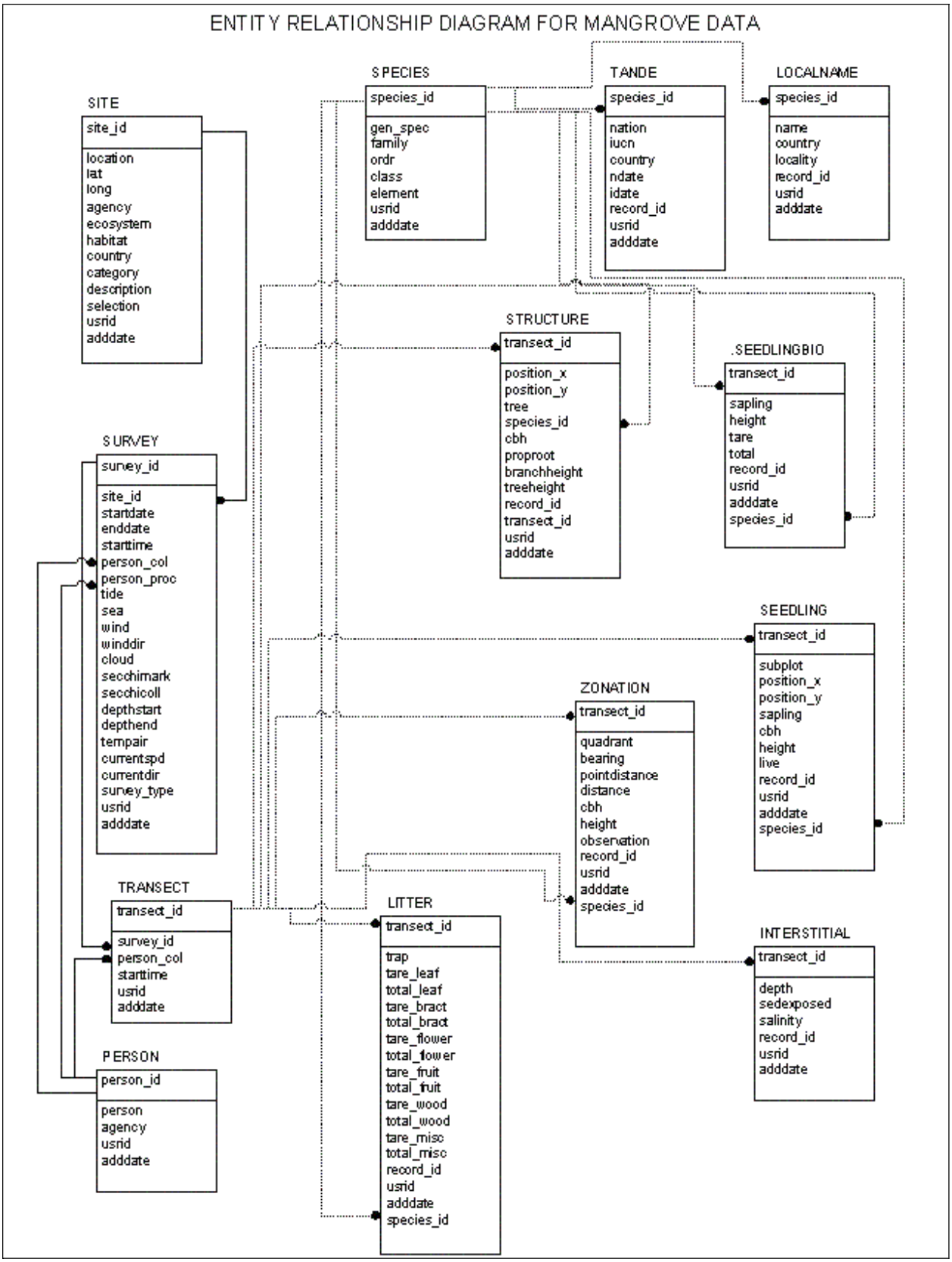

Figure 2.4 Simplified entity-relationship diagram for mangroves

2.5 Seagrasses

There are three tables associated with seagrasses, in addition to the site and survey tables. Coral and fish surveys are typically done based on transect, whereas seagrass surveys are based on quadrats or plots. The **transect** table is still used as the link between the seagrass survey data sheets and the **survey** table.

Seagrass Biomass

The seagrass biomass table **sgbiomass** is based on the seagrass biomass entry form. There is one record in the table for each core replicate taken. As with the seagrass growth table, a record needs to be entered into the **transect** table for the seagrass biomass. If 2 stations are sampled for each site, the entries in the **transect** table would represent the stations. None of the calculated fields, such as Ratio A:B are stored in the table. These are all calculated by the database, as required for view or printing reports, based on the input values.

Seagrass Growth

The **sggrowth** table contains the data from the Seagrass Growth Data entry form in the SMP Manual. For this table the **survey** table should have a start date and end date. As with all other tables this table is linked backed to the **transect** table with the *transect_id*. The quadrat number for from the seagrass growth data sheet is recorded in this table and not in the **transect** table, since there is only one set of data entered for each quadrat. An entry in the **transect** table is still required for compatibility with other tables in the group. The transect table links the **sggrowth** table back to the **survey** table. The transect number given in the **transect** table should be 1. None of the calculated values such as areal productivity, turnover, or biomass of the plants are stored in the data table. These are all calculated by the database, as required for view or printing reports, based on the input values.

Seagrass Leaf Area Index

The seagrass leaf area index table **sglai** is used to store the information from the leaf area index form. This table is linked back to the **survey** table through the **transect** table. There should be one entry in the **transect** table for each quadrat that is sampled. The **sglai** table has one record for each leaf that is measured. The area for each leaf is not entered. This value is calculated by the database.

The following page has the entity relationship diagram for seagrasses.

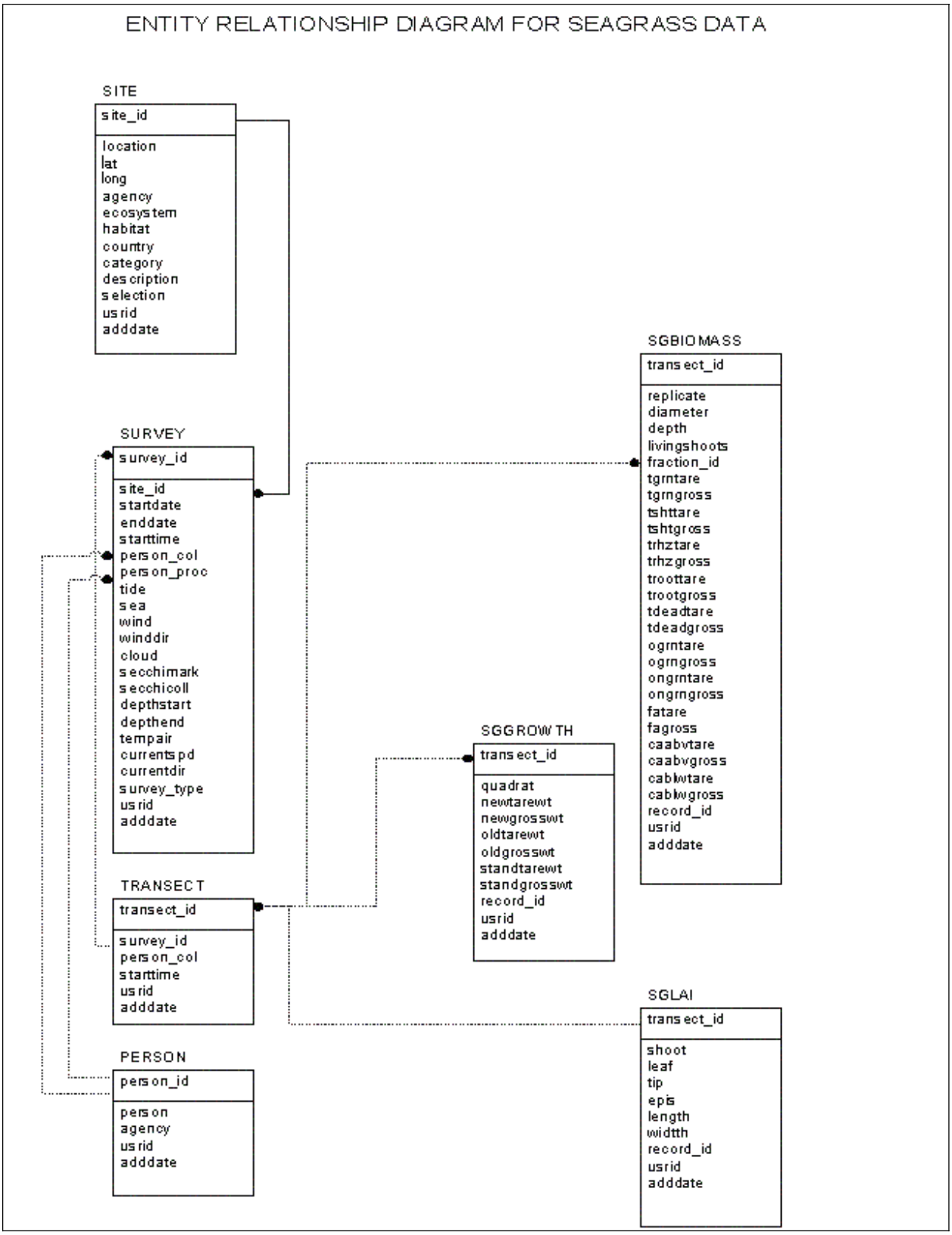

FIGURE 2.5 Entity relationship diagram for seagrasses

2.6 Marine Pollution

The data collected for water quality and marine pollution are not connected with any transects, plots, or quadrats so the **transect** table is not used for these forms. The water quality information is expected to be completed for every survey that is conducted whether it is a coral reef, mangrove, seagrass, or marine pollution survey. Each team that goes out in the field is expected to take one of the MBRS projects mulitparameters sondes with them to measure the water quality parameters.

Marine Pollution

The marine pollution table **pollution** corresponds to the Marine Pollution Samples data entry form. This form is used to identify what samples were collected for pollution analysis, and where they were collected. This table is linked to the **survey** table on *survey_id*. *Survey_id* is entered and maintained by the system. The table closely resembles the data form so the user can easily enter data from the form directly into the table. The table has an additional item, *sample_id* that is not on the data sheet in the SMP Manual. This should be the same value that is written on the sample jar. The *sampleid* is used to relate the lab analysis of the sample to the location at which it was collected. The values for *sample_id* should be unique for each site survey.

Water Quality

The water quality table, **quality**, is designed to maintain the results from the testing of water samples. This table is linked to the **survey** table on *survey_id.* There should be at least one record in this table for every entry in the **survey** table. Most of the data in this form is collected by a multiparameter sonde. Therefore it is expected that there will be records for multiple depths at the sampling sites. The multiparamater sonde should be able to collect the information for all of the columns in this table except for ammonia, phosphate, nitrites, nitrates, total coliform, and fecal coliform.

Pollution Analysis

The pollution analysis table, **analysis**, is designed to maintain the results from the laboratory analysis of the sediment and organism samples collected. This table is linked to the **pollution** table on the *sample_id* field. Therefore it is important that the *sample_id* field is accurate and unique for each sample.

The following page has the entity relationship diagram for pollution and water quality.

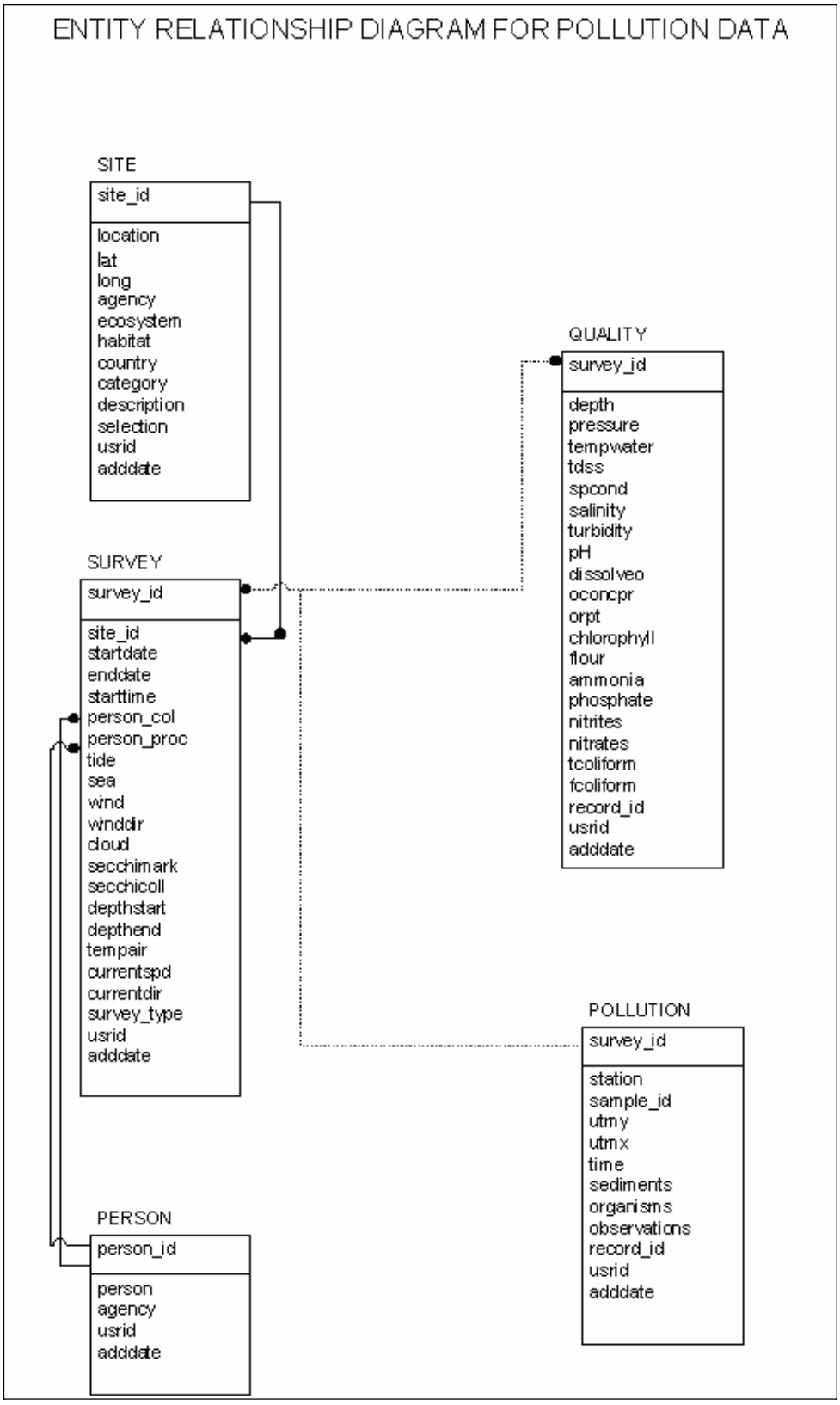

FIGURE 2.6 Entity relationship diagram for pollution and water quality

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CONTENTS Page

1 DATA ENTRY

This chapter is designed to provide the user with step-by-step instructions necessary for entering the field data into the database via web-based data entry forms. To enhance this user guide, the brief explanation for each data entry form includes an introduction, objective, structure, item descriptions, legend, screenshots, and any other information deemed useful to the user. For each data entry form several elements, primarily those for navigation, remain the same. Those elements are shown in Figure 1.0 and described in Legend 1.0. The items identified in Figure 1.0 will not be identified on any subsequent pages.

Note: The screenshots used in this chapter, were created from a temporary database and the data shown in the screenshots should not be considered applicable to the MBRS project. There may be differences between the actual online form and the screenshots in this manual.

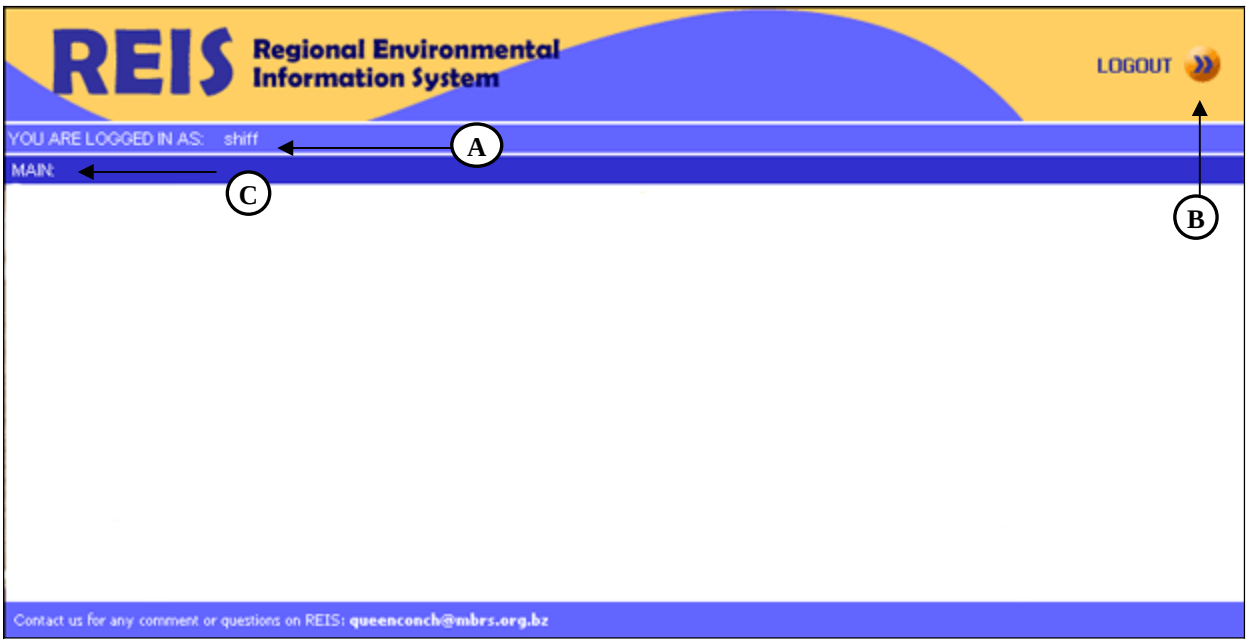


Figure 1.0. Basic elements for each data entry page.

Legend 1.0. Legend for Figure 1.0

	Description
A	Indicates the name of the person currently logged into the REIS private database.
B	This button will log the user out of the REIS private database.
C	This section serves as a navigation aid to what page the user is accessing, as well as links to previous levels.

1.1 Login/Menu Pages

When first accessing the system the user will be presented with a login page as shown in Figure 1.1a with navigation explained in Legend 1.1a. The users' login name and password are provided to the user by the MBRS database administrator. To access the site the user must have cookies and Java enabled on their browser.

Figure 1.1a. User login page.

Legend 1.1a. Legend for Figure 1.1a

	Description
A	This is where the user enters the login name provided by the MBRS database administrator.
B	This is where the user enters the password provided by the MBRS database administrator.
C	This submits the login and if valid connects the user to the menu page.

Once the user has successfully logged onto the MBRS system, the user is taken to the main menu page. A sample menu page is shown in Figure 1.1b with navigation explained in Legend 1.1b. There are seven main thematic areas found within this REIS database. These thematic areas are coral reef ecology, mangroves and seagrasses, marine pollution, oceanography, marine protected areas, spawning aggregations, and administration. This chapter discusses the input forms for the Coral Reef Ecology thematic area. From this menu page, the user can access the data entry forms (Chapter 1) and reports (Chapter 2). Refer to chapter 2 for report details.

To access the data entry forms for any of the thematic areas, select the INPUT FORMS button associated with that thematic area. For example, to access the thematic area 'coral reef ecology', select the INPUT FORMS button directly to the right (Figure 1.1b, Legend 1.1b, label A). Selecting this button takes the user to the coral reef and fish forms menu (See section 1.1.1).

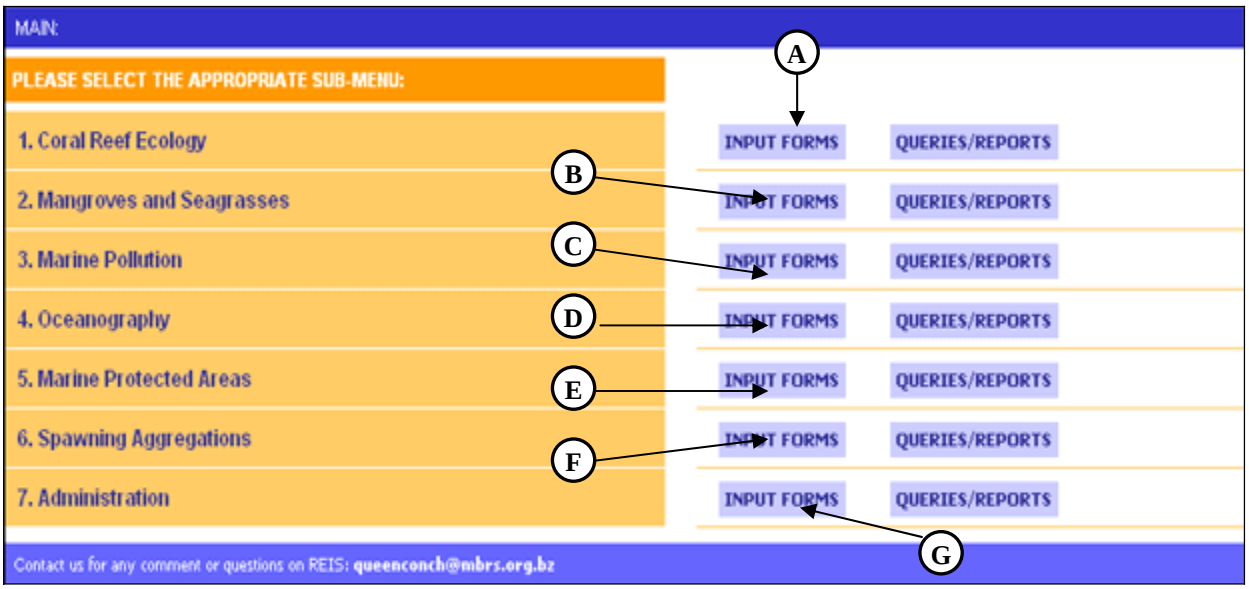


Figure 1.1b. Menu form.

Legend 1.1b. Legend for Figure 1.1b

	Description
A	Menu of coral reef ecology data entry forms.
B	Menu of mangrove and seagrass data entry forms.
C	Menu of marine pollution and oceanography data entry forms.
D	Menu of oceanography data entry forms. (Not yet implemented)
E	Menu of marine protected areas data entry forms. (Not yet implemented)
F	Menu of spawning aggregation data entry forms. (Not yet implemented)
G	Menu of administration data entry forms. (Must have administrative privileges.)

1.1.1 Coral and Fish forms Menu

There are six different coral and fish data entry forms (Figure 1.1.1, Legend 1.1.1). These are manta tow, adult fish, fish recruitment, rover diver, point intercept, and benthic coral. To begin entering coral and fish survey data, the user must select either the NEW SURVEY or EXISTING SURVEY button. All of the monitoring data is linked to the survey information. Therefore a record must be entered into the survey table before any monitoring data can be added. To enter a new survey for a specific data set (i.e. adult fish, rover diver, benthic coral, etc) select the NEW SURVEY button to the right of that form title. For details on how to enter a new survey and select an existing survey, refer to section 1.2 of this user manual. If a survey has already been entered into the database, those surveys are accessed through the EXISTING SURVEY button. A user would need to go to an existing survey, if there was more monitoring data to be entered for that survey, or a mistake was made in the original data entry for the survey record and the user has to correct it.

Figure 1.1.1. Coral and fish forms Menu

Legend 1.1.1. Legend for Figure 1.1.1.

	Description
A	This column of buttons connects the user to the new survey entry form for the dataset listed.
B	This column of buttons connects the user to the existing surveys for the dataset listed.

1.2 Survey and Transect Forms

The following procedures apply to the Coral and Fish forms (Section 1.3). This section provides instructions on how to get through this procedure to access the data entry forms. In all of the data entry forms required fields are marked with an asterisk.

The objective of the survey forms is to record the detailed sampling information that describes the physical conditions at the time of the survey and other information describing the survey itself. The survey items are listed and discussed in Table 1.2. There is one survey record for each site visit, for each set of data collected.

Table 1.2. Survey Item Descriptions

Item Name	Required	Item Description
Site ID	Yes	Site ID is an identifier used to relate information from the survey table to the site table.
Person Collecting	Yes	The name of the individual conducting the survey in the field.
Person Processing		The name of the individual processing the samples in the lab.
Tide	Yes	The tidal stage at the time of the sampling. The valid values are low, high, falling, and rising. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of the tidal stages.
Cloud Cover (0-8)		The cloud cover in eighths of sky covered (0-8) at the time of the sampling. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of values 0 through 8.
Current Speed		The water current speed at the time of sampling
Start Date (MM/DDMYY)	Yes	Either the beginning date of a timed sampling, such as leaf litter or seagrass growth, or the date of sampling.
End Date (MM/DDMYY)		The end date of a timed sampling, such as leaf litter or seagrass growth.
Start Time (HH:MM)	Yes	Time at which sampling was started.
Sea State	Yes	The sea state at the time of the sampling. The valid values are calm, slight, moderate, and rough. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of valid values.
Air Temp (°C)		The air temperature at the time of sampling.
Wind		The estimated wind speed at the time of sampling.
Secchi At Marking		The secchi value at the time of the first visit to the site. This is used only for the seagrass growth surveys.
Secchi At Collection		The secchi value at the time of the last visit to the site. This is used only for the seagrass growth surveys.
Current Direction		The direction of the water current at the time of sampling.

1.2.1 Entering Survey data

To enter a new survey for a thematic area, select the NEW SURVEY button (i.e. Coral forms>Benthic data Figure 1.1.1, Legend 1.1.1, Letter A), found on the forms menu for that thematic area (Figure 1.2.1, Legend 1.2.1). Note: One site may have multiple surveys. A survey record needs to be completed for each type of survey being conducted (i.e. point intercept and benthic coral) at a site. After the survey data has been entered the user will be taken to the Survey List page (Section 1.2.3).

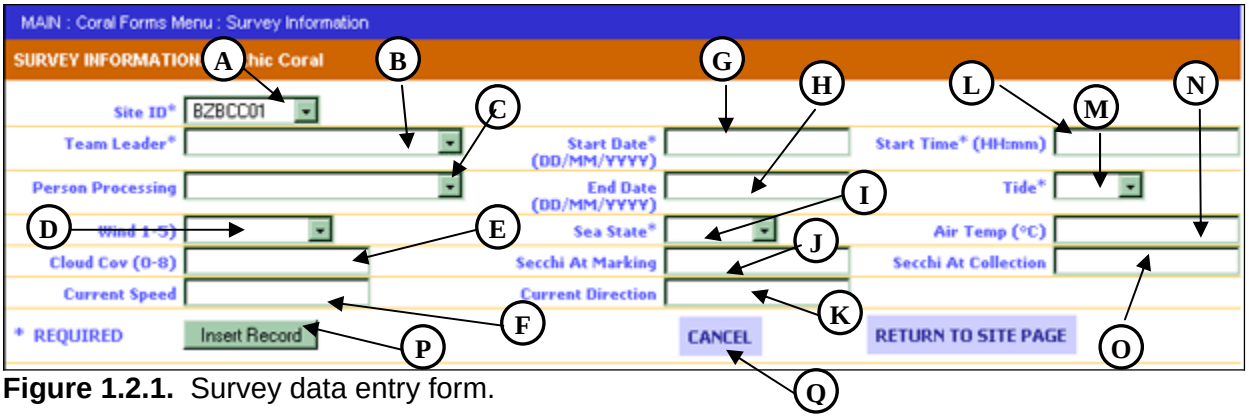


Figure 1.2.1. Survey data entry form.

Legend 1.2.1. Survey entry data: Legend for Figure 1.2.1

	Description
A	Select a site ID from the pull down menu
B	Select the name of the person who collected the data from the pull down menu
C	Select the name of the person who processed the data in the lab. This is to be left blank if no laboratory analysis was done.
D	Select the wind speed at the time of sampling from the pull down menu.
E	Enter a value 0-8 for the cloud cover present at the time of the sampling.
F	Enter the water current speed. This is an optional field.
G	Enter the date of the sampling or the start date for a timed interval sampling such as seagrass growth or leaf litter.
H	Enter the end date of the sampling. This will be the same as the start date unless it is a timed interval sampling such as seagrass growth or leaf litter.
I	Select a value from the pull down menu that represents the sea state at the time of the sampling.
J	Enter the secchi value at the time of marking the seagrasses. (For seagrass growth surveys only.)
K	Enter the direction of the water current at the time of sampling
L	Enter the time sampling started for the survey.
M	Select the tidal stage, at the time of the survey, from the pull down menu.
N	Enter the air temperature at the time of sampling
O	Enter the secchi value at the time of collecting the seagrasses. (For seagrass growth surveys only.)
P	Select this button to insert this data into the database. This will take the user to the survey information form (Figure 1.2.3a).
Q	Use the cancel button to clear the form without entering the data into the database

1.2.2 Editing Survey data

Use the survey edit form (Figure 1.2.2, Legend 1.2.2) to alter existing survey data. Existing survey data should be altered only if there was an error in the original data entry for the survey, or if there was missing data in the original form. The existing values will show up in the field when the edit form is opened. The survey data edit form is accessed from within a thematic area (i.e. Coral forms>Adult fish> existing survey> select site id> Edit; see Figure 1.3.3a, Legend 1.3.3a, Letter J). The items and item descriptions for the edit survey form are listed in Table 1.2.

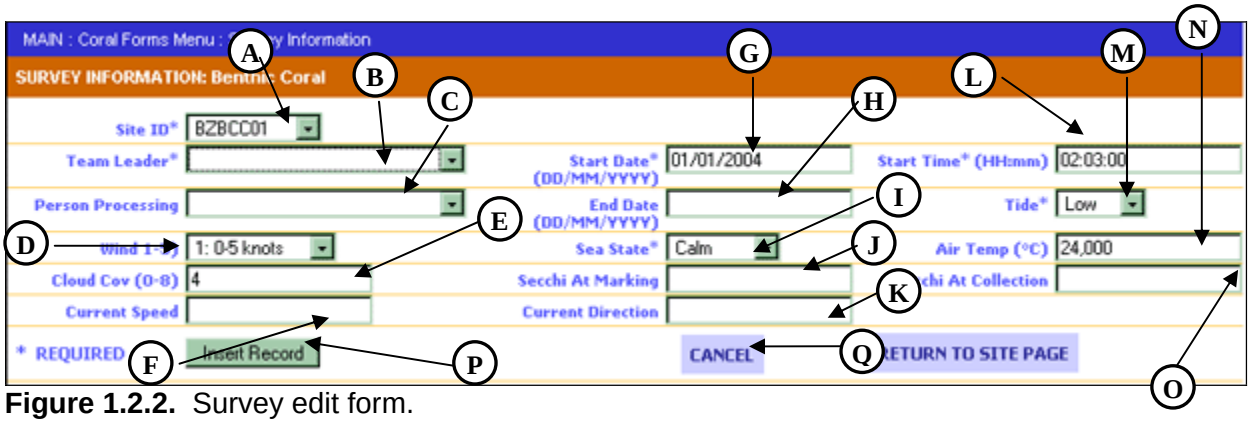


Figure 1.2.2. Survey edit form.

Legend 1.2.2. Edit Survey Data: Legend for Figure 1.2.2

	Description
A	The site ID cannot be changed during the edit procedure
B	Edit the name of the person who collected the data from the pull down menu. If you do not want to change the person, leave this as “no change”.
C	Edit the name of the person who is processing the data. If you do not want to change the person, leave this as “no change”.
D	Edit the wind speed at the time of sampling
E	Edit the cloud cover present at the time of the sampling.
F	Edit the water current speed
G	Edit the start date of the sampling
H	Edit the end date of the sampling
I	Edit the sea state at the time of the sampling.
J	Edit the secchi value at the time of marking the seagrass.
K	Edit the direction of the water current at the time of sampling
L	Edit start the time of the first sampling
M	Edit the tidal stage at the time the data was collected
N	Edit the air temperature at the time of sampling
O	Edit the secchi value at the time of seagrass collection.
P	Select this button to update this edited data in the database
Q	Use the “Cancel” button to cancel the editing and return to the previous page.

1.2.3 Survey List

The Survey List page (Figure 1.2.3a, Legend 1.2.3a) lists all of the surveys for the site shown for the dataset that was originally selected. From this list the user can add or edit survey data, refer to section 1.2.1 or section 1.2.2. Otherwise, select the survey to add data by selecting the SELECT button (Figure 1.2.3a, Legend 1.2.3a, Letter L). This will take the user to the transect page.

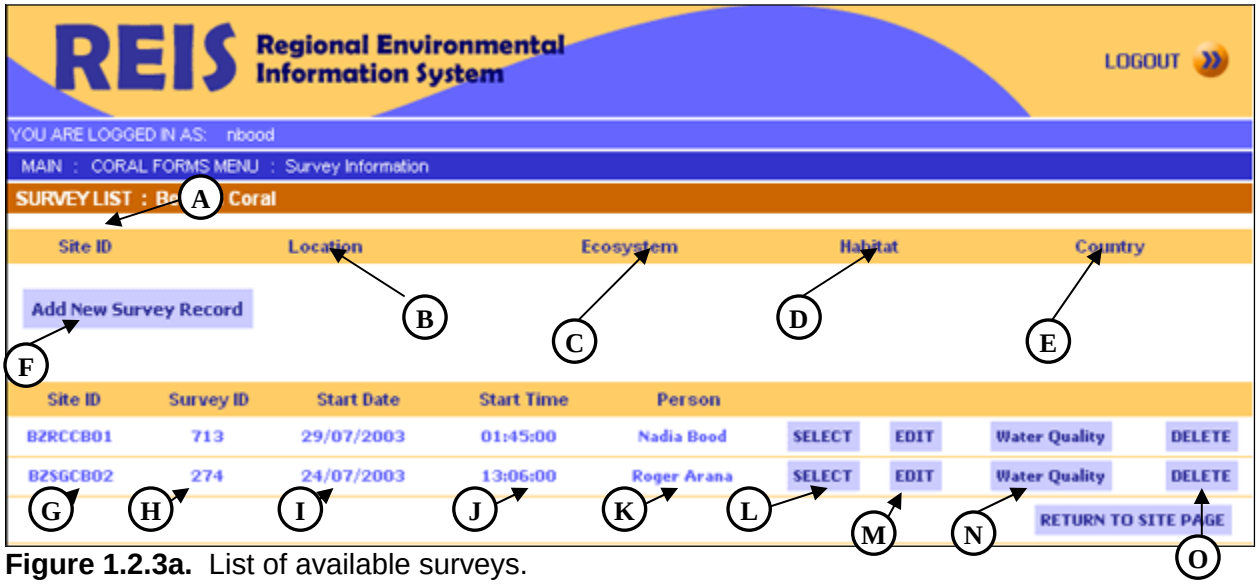


Figure 1.2.3a. List of available surveys.

Legend 1.2.3a. Legend for figure 1.2.3a

	Description
A	The site ID
B	The location of the site
C	The ecosystem
D	The habitat type
E	The country in which the site is located.
F	Select to add a new survey to this site
G	The site ID
H	The survey ID. This is displayed for reference purposes only.
I	The start date.
J	The start time.
K	The person who collected the data.
L	Select this button to go to the transect form for this survey (i.e. Benthic coral data)
M	Select this button to edit the survey information
N	Select this button to add water quality records to this survey.
O	Select this button to delete this survey

If the EXISTING SURVEY button was used at the thematic area menu an intermediate form (Figure 1.2.3b, Legend 1.2.3b) will be brought up, from which the user selects a site to add the data to. If the user does not know the site id, then all of the surveys for that thematic area can be listed by clicking on SELECT ALL. Once the site is selected, the survey list page is shown (Figure 1.2.3a, Legend 1.2.3a).

Figure 1.2.3b. Intermediate form.

Legend 1.2.3b. Legend for Figure 1.2.3b

	Description
A	Select an existing site from the pull down menu.
B	Select all survey records for the current thematic area

1.2.4 Transect Data

The transect form (Figure 1.2.4, Legend 1.2.4) is used to identify only transect specific information such as transect or plot number, person surveying the transect or plot, and in the case of coral reefs the start and end depths of the transect. The transect items are listed and discussed in Table 1.2.4.

Table 1.2.4 Transect Item Descriptions

Item Name	Required	Item Description
Transect No	Yes	The transect or plot number associated with the sampling. It is possible to have multiple transects per station per day. Note: To enter multiple transects per day, complete this form for each transect associated with this survey site.
Person Collecting	Yes	The name of the individual conducting the survey in the field.
Start Time (HH:MM)		Time at which sampling was started.
Start Depth (m)		The water depth in meters at the start of the coral transect. This field is only used for coral transects
Stop Depth (m)		The water depth in meters at the end of the coral transect. This field is only used for coral transects.
Bearing (0-360)		Heading in degrees from north of the transect line from the shoreline. Used for mangrove forest zonation.

If the appropriate transect is listed, use the SELECT button to access the data form. If not listed then add a new transect in the bottom line of the form. The new transect must be inserted before a data entry form based on that transect can be accessed. The select button on the transect form will take the user to the data entry form (i.e. Figure 1.3.2a).

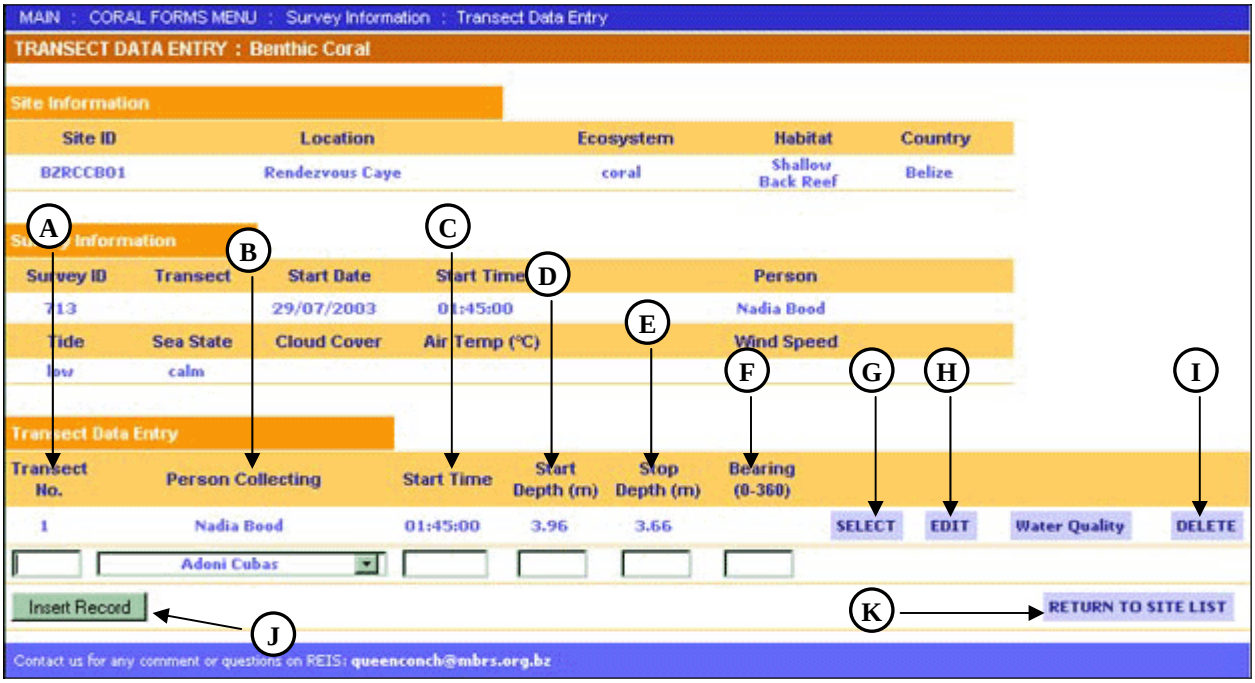


Figure 1.2.4. Transect data entry form.

Legend 1.2.4. Transect Data Entry: Legend for 1.2.4.

	Description
A	Enter the transect or plot number.
B	Select the name of the person who collected the data from the pull down menu. This may be the same person that was entered in the survey form.
C	Enter the time the transect survey was started.
D	Enter the depth at the start of the transect. This is used only for benthic coral.
E	Enter the depth at the end of the transect. This is used only for benthic coral.
F	Enter the transect bearing. Used for mangrove forest zonation.
G	Use the select button to access the data entry form.
H	Use the edit button to edit the transect record.
I	Use the delete button to delete the transect record.
J	Use insert record to insert the data into the table. When a new transect is entered it must be inserted before a data entry page based on the transect can be selected.
K	Use the “Return to Site Page” button to clear the fields and return to the site page listing all of the surveys.

1.3 Coral and Fish Forms

The coral and fish forms menu (Figure 1.1.1) list all the coral and fish forms available for data entry. Continuing from Section 1.1.1, the six coral and fish data entry forms are manta tow, adult fish, fish recruitment, rover diver, point intercept, and benthic coral. To access any of the coral or fish data entry forms, the user must select the either the NEW SURVEY or EXISTING SURVEY button. Then follow the steps outlined in section 1.2.

1.3.1 Benthic coral

The purpose of the benthic data forms are to enter coral data that was collected along the transects during the field sampling. The items in the benthic data table are species ID, species name, diameter, height, old dead, new dead, BB, WB, WPII, YP, DSI, DSII, RB, ASP, OTH, and bleached. Refer to Table 1.3.1 for item descriptions.

Table 1.3.1. Benthic Coral Items Descriptions.

Item Name	Required	Item Description
Species ID	Yes	A unique ID for the coral species being entered into the database. This field does not allow data entry. It is automatically updated with entry of the scientific name.
Species Name	Yes	The name of the coral species
Diameter (cm)	Yes	The diameter of the coral head being measured
Height (cm)	Yes	The height of the coral head being measured
Old Dead (%)	Yes	The percent (0-100) of the coral that has been long dead.
New Dead (%)	Yes	The percentage (0-100) of the coral that has recently died.
BB		The code for black band disease found on the coral.
WB		The code for white band disease found on the coral.
WPII		The code for white plague II disease found on the coral.
YB		The code for yellow blotch disease found on the coral.
DSI		The code for dark spots I disease found on the coral.
DSII		The code for dark spots II disease found on the coral.
RB		The code for red band disease found on the coral.
ASP		The code for aspogikosis disease found on the coral.
OTH		The code for other diseases found on the coral.
Bleached		A code for the level of coral bleaching present.

ADD

The benthic coral data entry form enables the user to add new records to the benthic coral table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

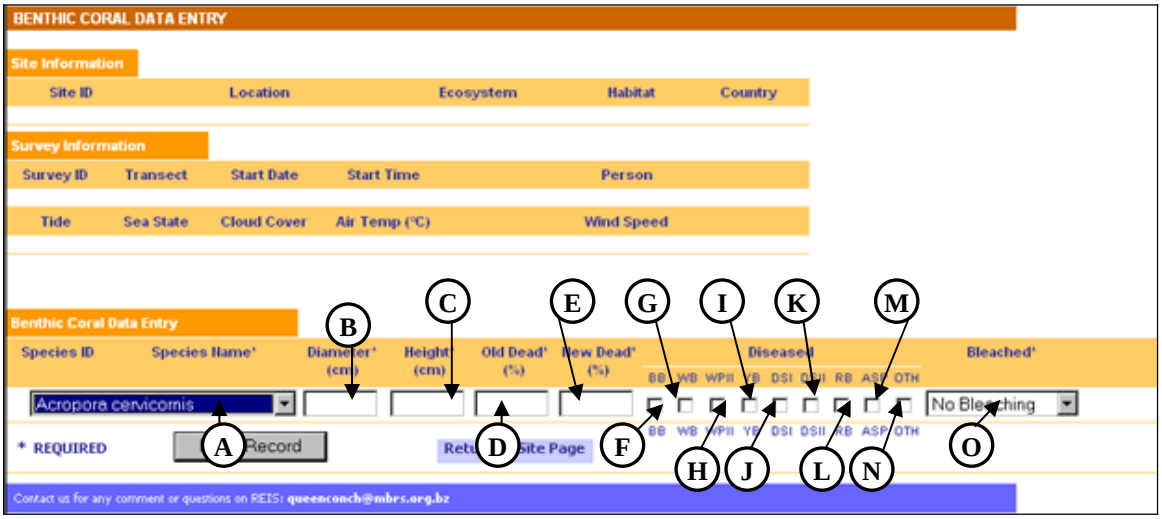


Figure 1.3.1a. Benthic coral ADD data form.

Legend 1.3.1a. Benthic Coral ADD Data: Legend for Figure 1.3.6a

	Description
A	Select the species name of the coral identified along the transect.
B	Enter the diameter (cm) of the coral species (Letter A) that was identified.
C	Enter the height (cm) of the coral species (Letter A) that was identified.
D	Enter the percent of dead coral species (Letter A) that was identified.
E	Enter the percent of new dead coral species (Letter A) that was identified.
F	Click on the BB box if black band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
G	Click on the WB box if white band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
H	Click on the WPII box if white plague II disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
I	Click on the YB box if yellow band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
J	Click on the DSI box if dark spots I disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
K	Click on the DSII box if dark spots II disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
L	Click on the RB box if red band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
M	Click on the ASP box if aspogikosis disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
N	Click on the OTH box if other diseases are present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
O	Select the level of bleaching from the pull down menu. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the bleaching levels.

EDIT

To edit the data in the benthic coral table, use the edit benthic coral form (Figure 1.3.1b, Legend 1.3.1b). Once the changes have been made, select the "update record" button to commit the edit to the database.

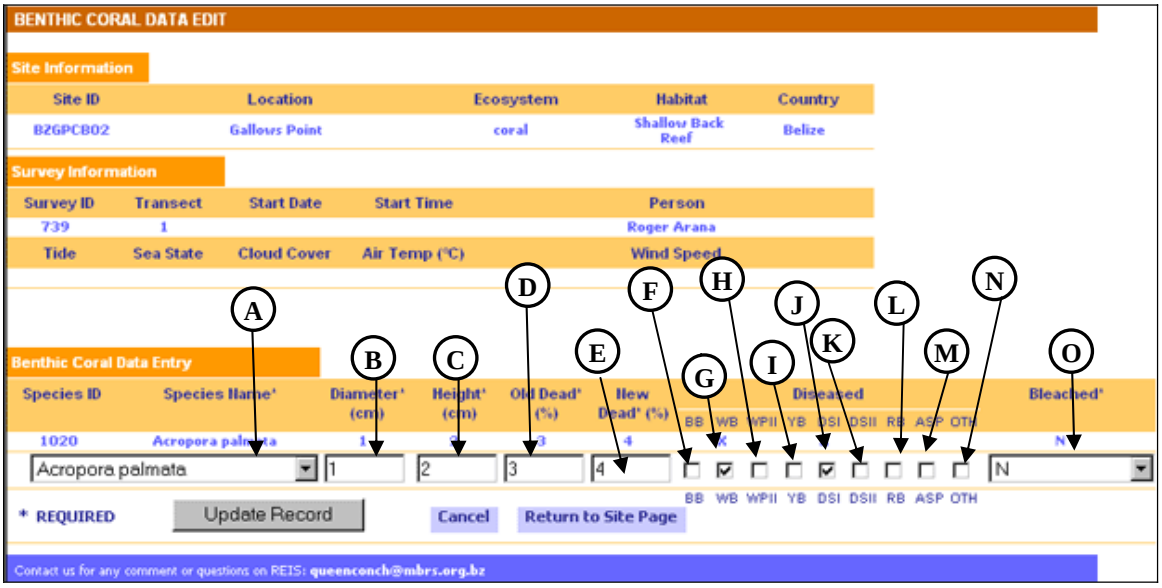


Figure 1.3.1b. Benthic coral data EDIT form.

Legend 1.3.1b. Benthic Coral EDIT Data: Legend for Figure 1.3.1b

	Description
A	Edit the species name by selecting a new name from the pull down menu.
B	Edit the diameter (cm) of the coral identified along the transect
C	Edit the height (cm) of the coral identified along the transect.
D	Edit the percentage of dead coral found along the transect
E	Edit the percentage of newly dead coral found along the transect
F	Click on the BB box if black band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
G	Click on the WB box if white band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
H	Click on the WPII box if white plague II disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease type codes.
I	Click on the YB box if yellow band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
J	Click on the DSI box if dark spots I disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
K	Click on the DSII box if dark spots II disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
L	Click on the RB box if red band disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
M	Click on the ASP box if aspogikosis disease is present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
N	Click on the OTH box if other diseases are present. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for description of the disease.
O	Select a new level of bleaching from the pull down menu.

1.3.2 Point Intercept

The point intercept transect data entry forms are used to enter the types of substrate identified on the transect. There are several differences between the field data sheets and the online forms. On the field data sheet, multiple transects could be recorded side-by-side. When using the web-based data entry forms, only one transect can be entered at a time. The field data sheet also lists each of the possible benthic types to be identified during the field collection whereas the online data entry form enables the user to select and enter data for only those types that were counted during the survey. The items in the point intercept table (Table 1.3.2) are benthic ID, benthic type, count, and comments.

Table 1.3.2. Point Intercept Items Descriptions

Item Name	Required	Item Description
Benthic ID	Yes	A unique ID to represent the benthic type. This field does not allow data entry. It is automatically updated with entry of the benthic type.
Benthic Type	Yes	A pull down menu of possible benthic types
Count	Yes	The number of occurrences for the benthic type identified along the transect
Comments		A comments field without restrictions. Use this field to record observations made for the benthic component or transect.

ADD

The point intercept form (Figure 1.3.2a, Legend 1.3.2a) enables the user to add records to the point intercept table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

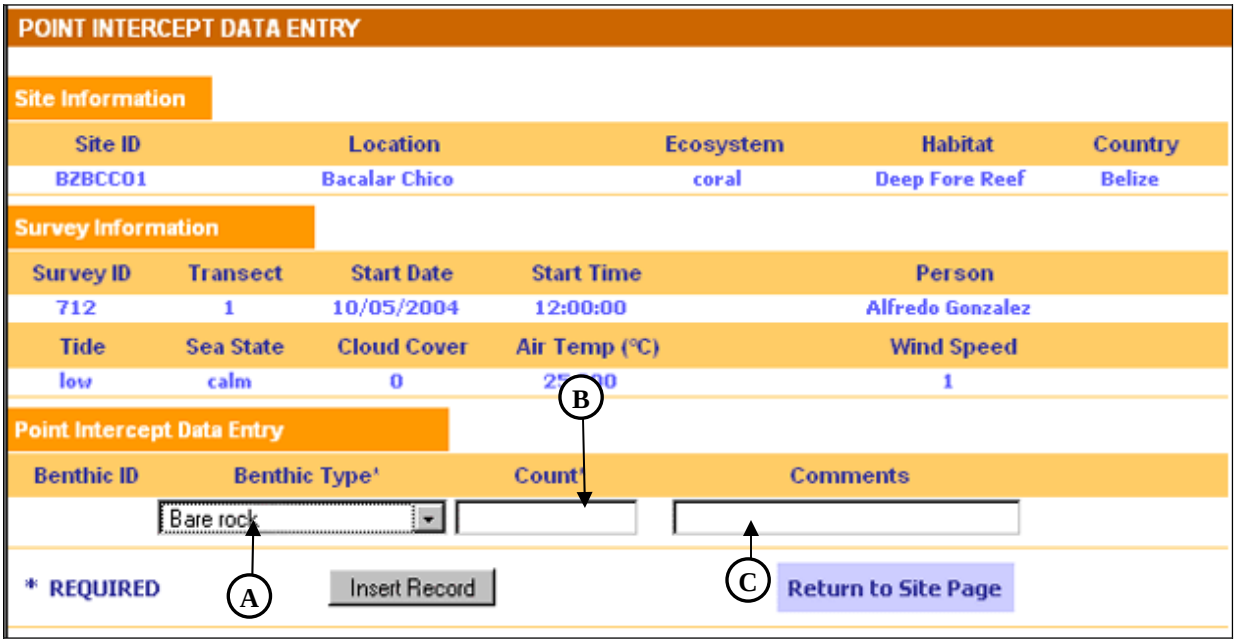


Figure 1.3.2a. Point Intercept ADD data form.

Legend 1.3.2a. Point Intercept ADD Data: Legend for Figure 1.3.5a.

	Description
A	Select the benthic type from the pull down list.
B	Enter the count of the benthic type identified in letter A along the transect
C	Enter any additional comments taken during the transect.

EDIT

Use the point intercept edit data form (Figure 1.3.2b, Legend 1.3.2b) to alter the records in the point intercept table. Once the data has been changed, the "update record" button must be selected to ensure the changes have been made to the database.

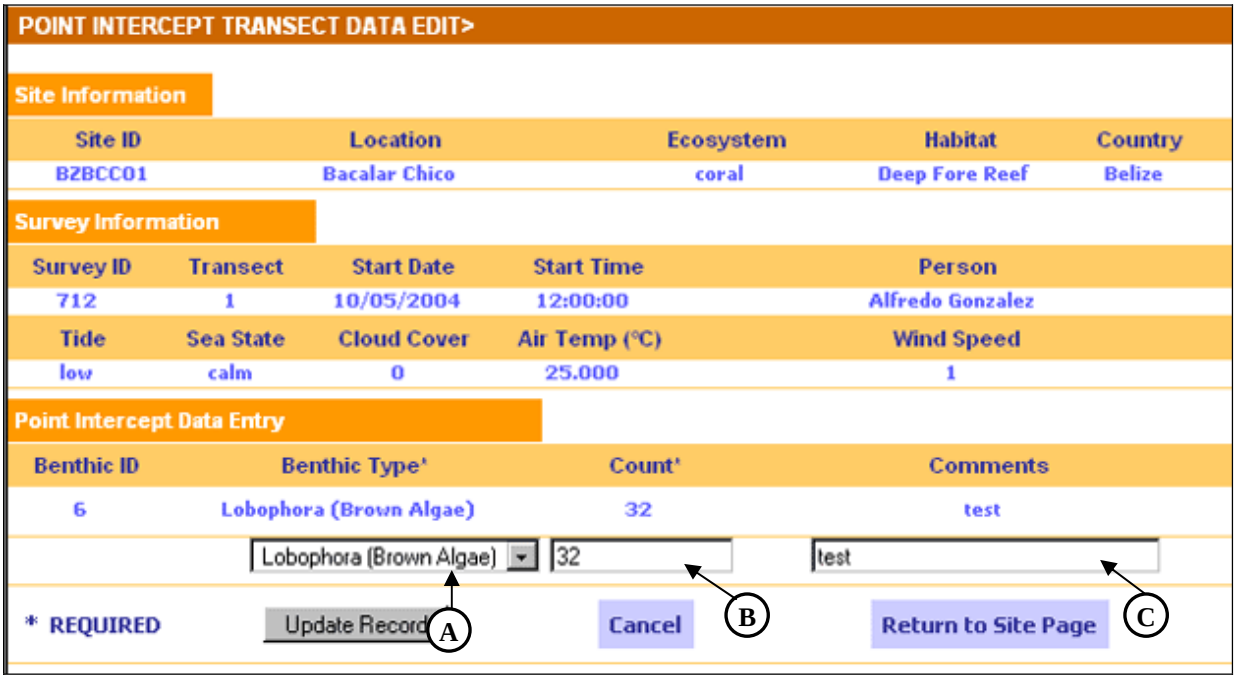


Figure 1.3.2b. Point Intercept data EDIT data form.

Legend 1.3.2b. Point Intercept EDIT Data: Legend for Figure 1.3.2b

	Description
A	Edit the benthic type by selecting a new benthic type from the pull down menu.
B	Edit the count of the benthic type in letter A, identified along the transect
C	Edit the text in the comments field.

1.3.3 Adult fish

The adult data entry form enables the user to insert and edit the adult fish data collected in the field into the database. The online data forms are different than the field data sheet from which data are being entered. The field data sheet lists both the family and scientific names of the fish species. You will notice that only the scientific names of the fish are on the online data entry form. The field data sheet lists each of the possible species to be identified during the field collection whereas the online data entry form enables the user to select and enter data for only those species that were present at the time of the survey. The items in adult fish table are described in Table 1.3.3.

Table 1.3.3. Adult Fish Items Descriptions.

Item Name	Required	Item Description
Species ID	Yes	A unique ID of the species name. This field does not require data entry. It is automatically updated with entry of the scientific name.
Species Name	Yes	The scientific name of adult fish species. There cannot be 2 entries with the same scientific name on the same transect.
0-5 cm		The count of adult fish in size range 0 to 5 cm
6-10 cm		The count of adult fish in size range 6 to 10 cm
11-20 cm		The count of adult fish in size range 11 to 20 cm
21-30 cm		The count of adult fish in size range 21 to 30 cm
31-40 cm		The count of adult fish in size range 31 to 40 cm
>40 cm		The count of adult fish that are larger than 41 cm in length

ADD

To add a new record to the adult fish table, use the data entry boxes (Figure 1.3.3a, Legend 1.3.3a, Letters A-B, D-I). Once the correct data is entered into these boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (1.2.3a).

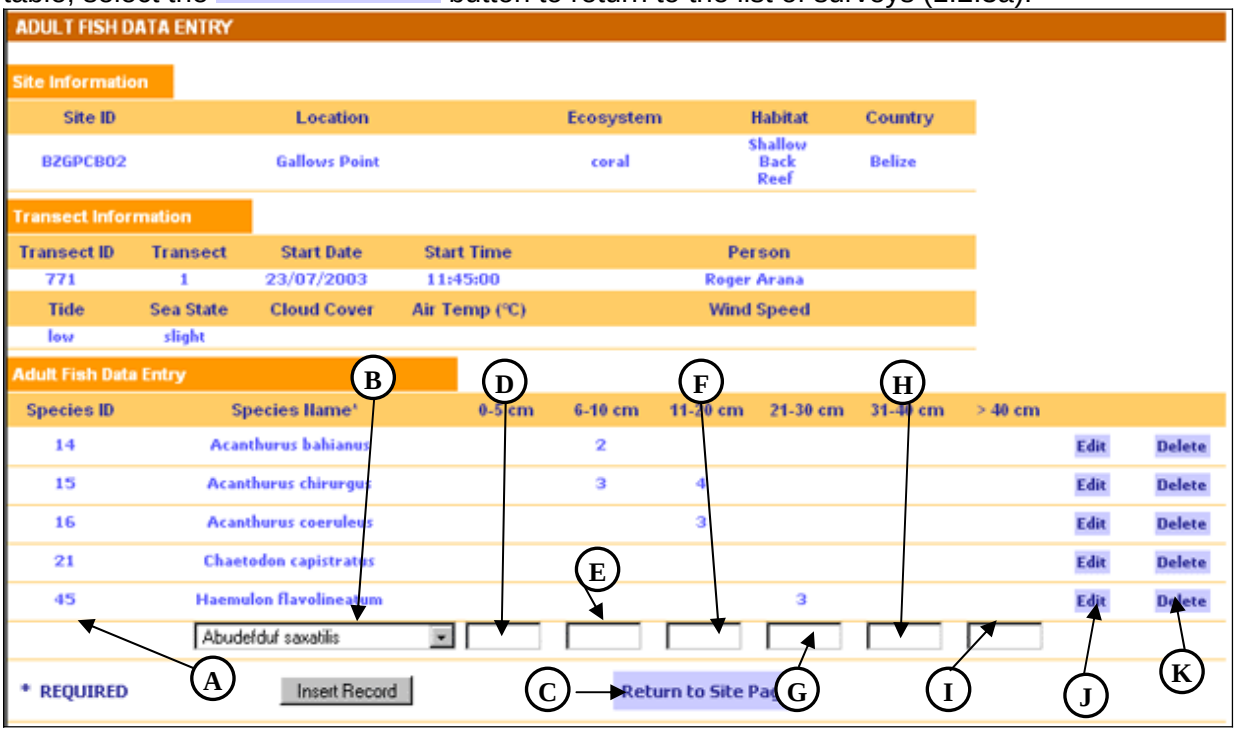


Figure 1.3.3a. Adult fish ADD data form.

Legend 1.3.3a. Adult Fish ADD Data Form: Legend for Figure 1.3.3a.

	Description
A	Displays the species ID associated with the species name.
B	Select the name of the species from the pull down menu. You cannot enter the same scientific name twice in the same transect.
C	Returns to the survey list (Figure 1.2.3a)
D	Enter the count of the adult fish species (Letter B) that were identified as less than 5 cm in length
E	Enter the count of the adult fish species (Letter B) that were identified as 6 to10 cm in length
F	Enter the count of the adult fish species (Letter B) that were identified as 11 to 20 cm in length
G	Enter the count of the adult fish species (Letter B) that were identified as 21 to 30 cm in length
H	Enter the count of the adult fish species (Letter B) that were identified as 31 to 40 cm in length
I	Enter the count of the adult fish species (Letter B) that were identified as greater than 40 cm in length
J	Edit the row of data for a species
K	Delete a row of data for a species from the database

EDIT

The edit adult fish data form (Figure 1.3.3b Legend 1.3.3b) enables the user to change, alter, or update the previously entered records in the adult fish data table. After editing a species, select the "update record" button to update the database with the new changes; otherwise, the edits will be discarded.

Important note: only one fish species can be edited at a time. After each row of edits is entered into the data entry boxes, "update record" (Legend 1.3.3b, Figure 1.3.3b) must be used to make this update in the database. If edits are made to a row without using the *update record*, the edit changes will not be made. The updated record will appear at the bottom of the record list.

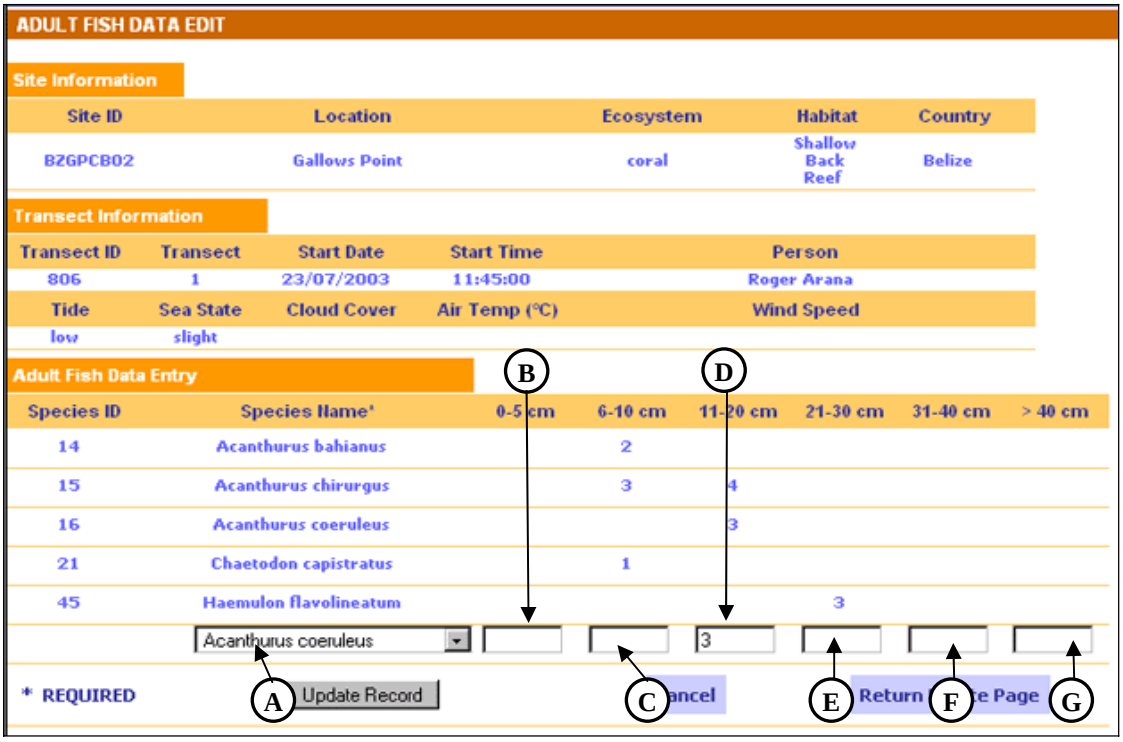


Figure 1.3.3b. Adult fish EDIT data form.

Legend 1.3.3b. Adult Fish EDIT Data: Legend for Figure 1.3.3b.

	Description
A	Edit the species name by selecting the new species from the pull down menu.
B	Edit the count of the adult fish species (Letter A) that were identified as less than 5 cm in length
C	Edit the count of the adult fish species (Letter A) that were identified as 6 to10 cm in length
D	Edit the count of the adult fish species (Letter A) that were identified as 11 to 20 cm in length
E	Edit the count of the adult fish species (Letter A) that were identified as 21 to 30 cm in length
F	Edit the count of the adult fish species (Letter A) that were identified as 31 to 40 cm in length
G	Edit the count of the adult fish species (Letter A) that were identified as greater than 40 cm in length

1.3.4 Fish Recruitment

The fish recruitment data entry forms enable the user to enter and edit the relevant fish recruitment monitoring data. Use these forms to enter the count of fish recruitment by species that is below the max TL (cm). The values for the max TL (cm) are not provided on the web-based data entry form; refer to the field data sheet for the max TL (cm) per species. Refer to Table 1.3.4 for item descriptions of the fields in the fish recruitment forms. The fish recruitment forms differ slightly from the field data sheets taken into the field. On the field data sheet, both the species name and common name of fishes are listed. The web-based data entry forms includes the fish species name and does not include the common name. The field data sheet lists each of the possible species to be identified during the field collection whereas the online data entry form enables the user to select and enter data for only those species that were present at the time of the survey.

Table 1.3.4. Fish Recruitment Items Descriptions.

Item Name	Required	Item Description
Species ID	Yes	A unique ID of the species name. This field does not require data entry. It is automatically updated with entry of the scientific name.
Species Name	Yes	The scientific name of fish species.
Fish Count	Yes	The number of fish below the maxTL (cm). For an explanation of max TL (cm) refer to the “Manual of Methods for Synoptic Monitoring Technical Document No. 4”

ADD

To add a new record to the fish recruitment table, use the fish recruitment data entry form (Figure 1.3.4a, Legend 1.3.4a). Once the new data is entered into these boxes, use the "insert record" button to commit this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

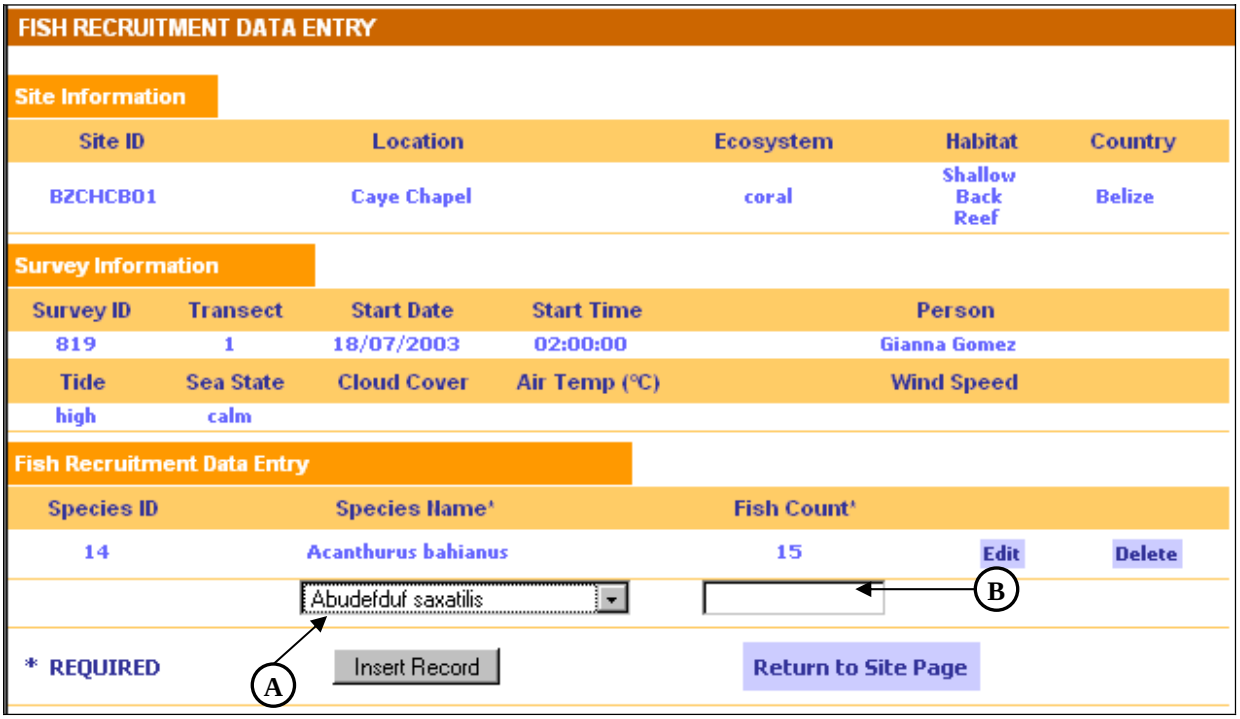


Figure 1.3.4a. Fish recruitment ADD data form.

Legend 1.3.4a. Fish Recruitment ADD Data: Legend for Figure 1.3.4a

	Description
A	Select the name of the species to add to the fish recruitment table using the pull down menu.
B	Enter the count of fish species below the max TL (cm)

EDIT

The edit fish recruitment data form (Figure 1.3.4b, Legend 1.3.4b) enables the user to change, alter, or update the previously entered fish recruitment records. After editing a record, the "update record" button must be used to commit the record changes to the database; otherwise, the edits will be discarded.

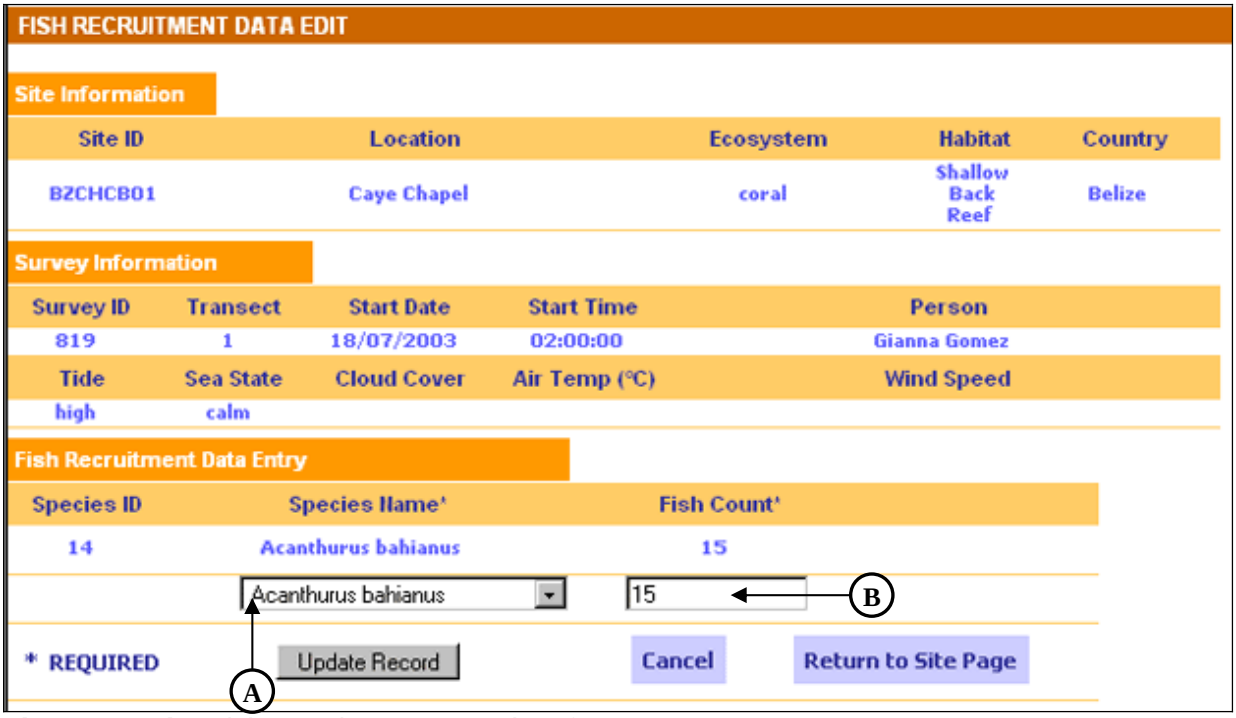


Figure 1.3.4b. Fish recruitment EDIT data form.

Legend 1.3.4b. Fish Recruitment EDIT data: Legend for Figure 1.3.4b

	Description
A	Edit the species name by selecting a new species from the pull down menu
B	Edit the count of fish species below the max TL (cm)

1.3.5 Rover Diver

Use the rover diver forms to enter and edit the records in the rover diver table. The items in the rover diver table are species ID, species name, and abundance. For item descriptions, refer to Table 1.3.5. The web-based rover diver forms differ from the field data sheets. The field data sheets list the possible fish species and four abundance values to circle. On the web-based forms, the fish species are available as a pull down menu, and the abundance is an empty field.

Table 1.3.5. Rover Diver Items Description.

Item Name	Required	Item Description
Species ID	Yes	A unique ID of the species name. This field does not allow data entry. It is automatically updated with entry of the scientific name.
Species Name	Yes	The scientific name of fish species.
Abundance (S, F, M, A)	Yes	A one-letter code for the number of individual fish counted. S = single, F = few, M = many, A = abundant

ADD

To enter data into the rover diver table, use the rover diver form (Figure 1.3.5a, Legend 1.3.5a). Once all the fields are filled in, select the "insert record" button. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

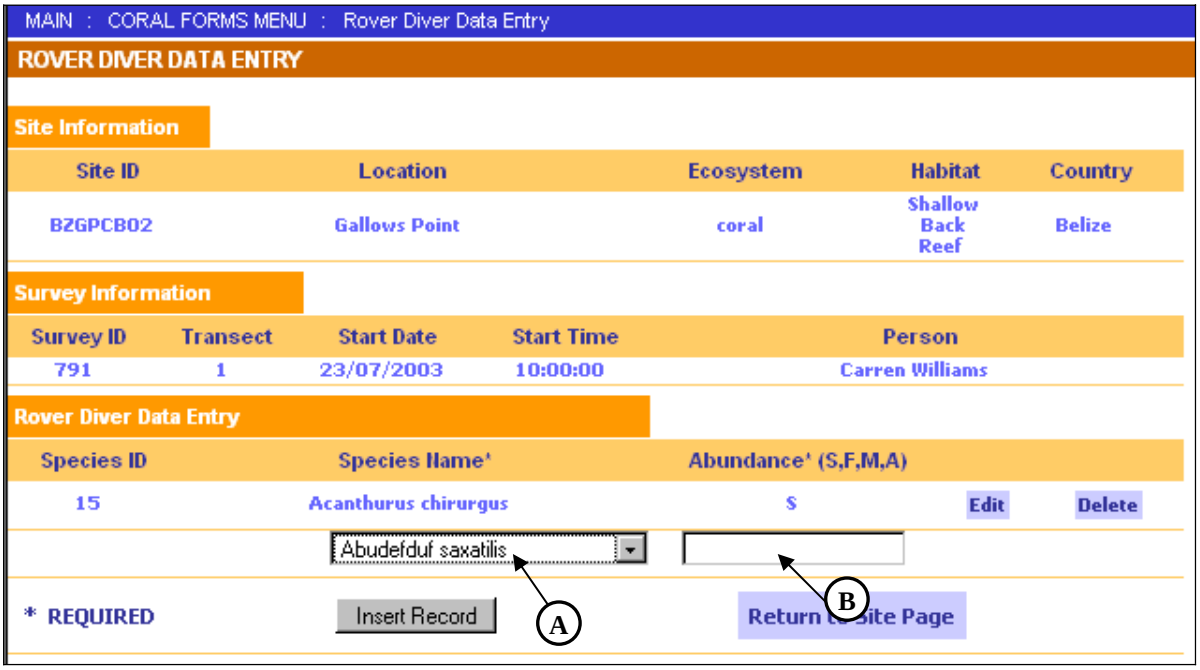


Figure 1.3.5a. Rover diver ADD data form.

Legend 1.3.5a. Rover Diver ADD Data: Legend for Figure 1.3.5a

	Description
A	Select the name of the species to add to the fish recruitment database using the pull down menu.
B	Enter S, F, M, or A into the field. See Table 1.3.4 for item descriptions. Note: only S, F, M, A will be accepted into this field. Any other letter or number will result in an error message.

EDIT

The rover diver edit form (Legend 1.3.5b and Figure 1.3.5b) enables the user to edit previously entered records in the rover diver table. After the edits have been made, select the "update record" button to ensure the changes are recorded in the database.

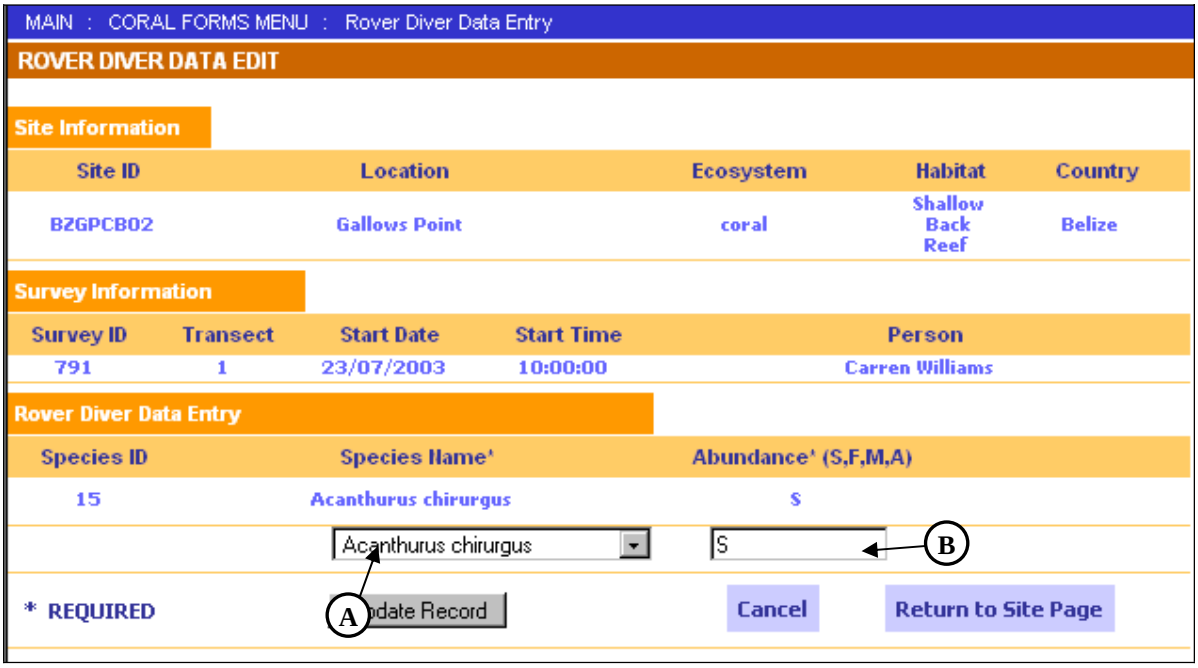


Figure 1.3.5b. Rover diver EDIT data form.

Legend 1.3.5b. Rover Diver EDIT Data: Legend for Figure 1.3.5b.

	Description
A	Edit the species Name by selecting a new species from the pull down menu
B	Edit the abundance value for the fish species

1.3.6 Manta tow

Use the manta tow data entry form to enter and edit the manta tow sampling data. The items in the manta tow table are the tow number, live coral, dead coral, soft coral, algae, and other features. Refer to Table 1.3.6 for item descriptions.

Table 1.3.6. Manta Tow Items Descriptions.

Item Name	Required	Item Description
Tow Number	Yes	The number of the tow being recorded.
Live Coral (0-5)	Yes	The percentage of live coral.
Dead Coral (0-5)	Yes	The percentage of dead coral
Soft Coral (0-5)	Yes	The percentage of soft coral
Algae (0-5)	Yes	The percentage of algae
Other Features		Other features found in the reef.

ADD

Use the manta tow form to add a new record into the manta tow table (Figure 1.3.6a, Legend 1.3.6a). After each row of correct data is entered into these boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

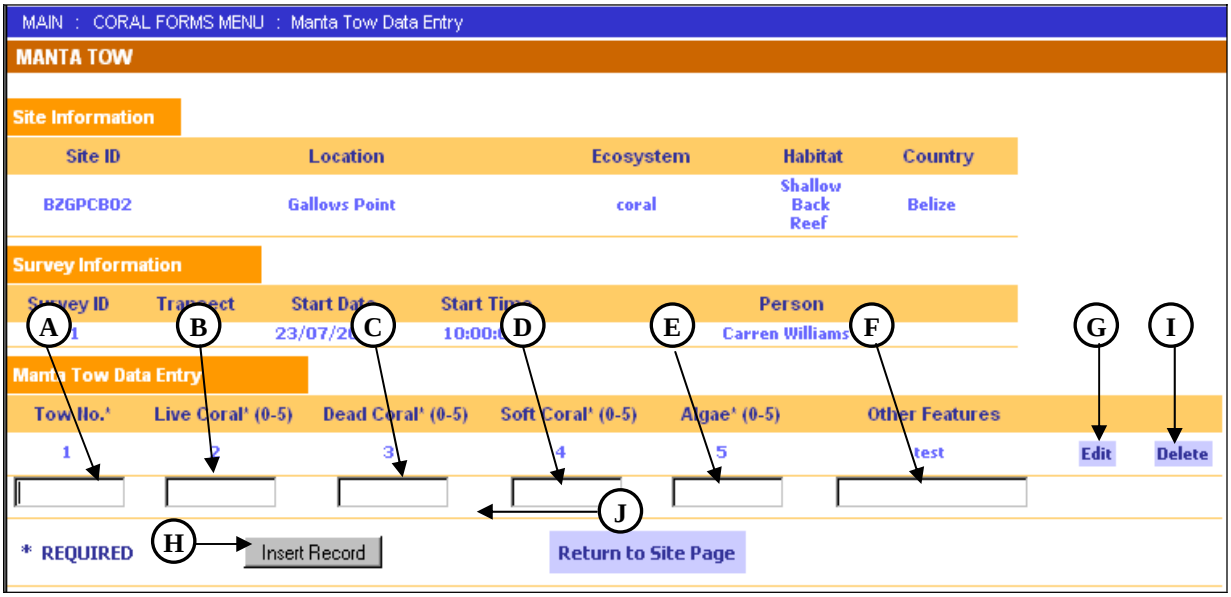


Figure 1.3.6a. Manta tow ADD data form.

Legend 1.3.6a. Manta Tow ADD Data: Legend for Figure 1.3.6a

	Description
A	Enter the number of the manta tow being entered into the database
B	Enter a value between 0 and 5, with an optional + or -, to represent the percentage of live coral. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for an explanation of these values.
C	Enter a value between 0 and 5, with an optional + or -, to represent the percentage of dead coral. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for an explanation of these values.
D	Enter a value between 0 and 5, with an optional + or -, to represent the percentage of soft coral. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for an explanation of these values.
E	Enter a value between 0 and 5, with an optional + or -, to represent the percentage of algae. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for an explanation of these values.
F	Enter any other features of the reef that were noted during the tow.
G	Use this button to edit the values in the database. See figure 12
H	Inserts the data entered into the fields A thought F into database.
I	Delete the row of data from the database. Remember all deletes are permanent.

EDIT

Use the manta tow edit form (Figure 1.3.6b, Legend 1.3.6b) to edit the data in the manta tow table. To edit an existing record in the manta tow table, click the "edit" button next to the record you would like to edit. After editing a record, "update record "must be used to update the database with the edit changes; otherwise, the edits will be discarded.

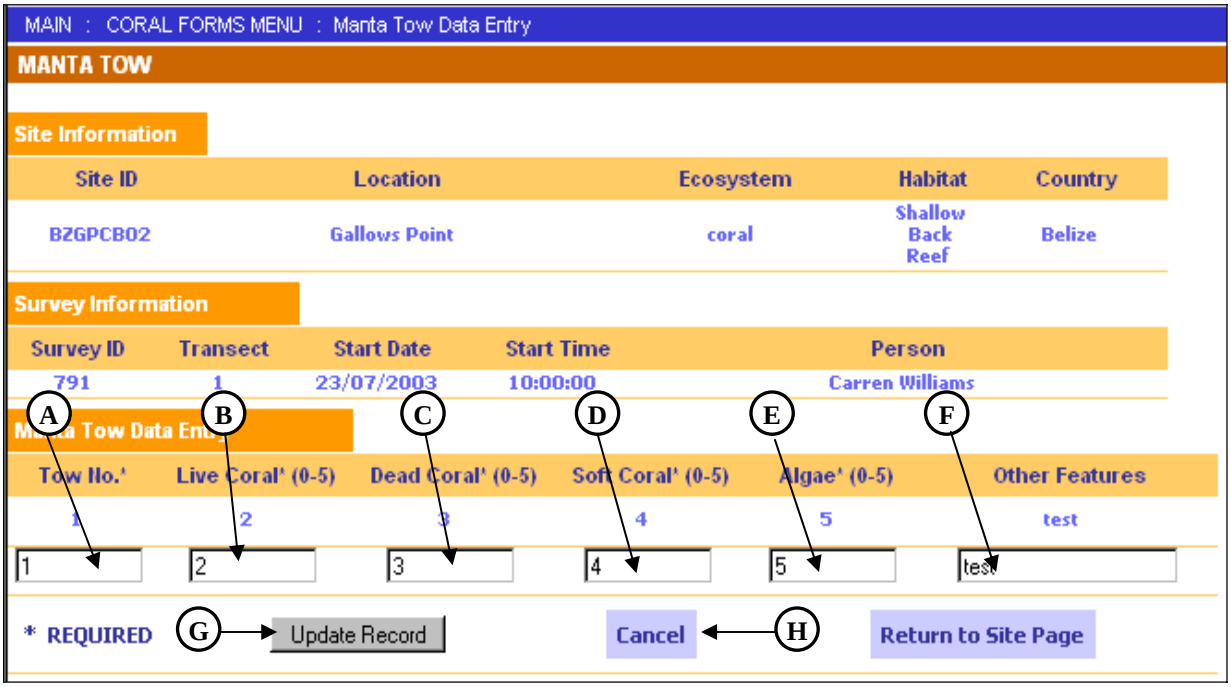


Figure 1.3.6b. Manta tow EDIT data form.

Legend 1.3.6b. Manta Tow EDIT Data: Legend for Figure 1.3.6b

	Description
A	Edit the tow number previously entered
B	Edit the percentage value for the live coral
C	Edit the percentage value for the dead coral
D	Edit the percentage value for the soft coral
E	Edit the percentage value for the algae
F	Edit the other features field for the tow.
G	Updates the database with the changed values entered in fields A-F. Note: Updates will not be recorded if this button is not used.
H	Cancels the edit procedure, and returns to the Add screen without updating the records in the database.

2 REPORTS

This chapter is designed to provide the user with the step-by-step instructions necessary to view and print the information in the data grouping tables in a report format. To enhance this user guide, the explanation for each report includes, where applicable, an introduction, objective, structure, item descriptions, legend, screenshots, and any other information deemed useful to the user. For each report, several navigational elements remain the same as those in the forms. Those elements are shown in Figure 1.1 and described in Legend 1.1. The items identified in Figure 1.1 will not be identified on any pages in this chapter.

> Note: The screenshots used in this chapter, were created from a temporary database and the data shown in the screenshots should not be considered applicable to the MBRS project. There may be differences between the actual online reports and the screenshots in this manual.

2.1 Menu pages

Once the user has successfully logged onto the MBRS system, the user is taken to the main menu page. A sample menu page is shown in Figure 2.1 with navigation explained in Legend 2.1. There are seven main data groupings found within this reef system database. These data groupings are coral reef ecology, mangroves and seagrasses, marine pollution, oceanography, marine protected areas, spawning aggregations, and administration. This chapter discusses the output reports for the Coral Reef Ecology data grouping. From this menu page, the user can access the data entry forms (Chapter 1) and reports (Chapter 2). Refer to chapter 1 for details on the input forms.

To access the output reports for any of the data groupings, select the "queries/reports" button associated with that data grouping. For example, to access the reports for 'coral reef ecology', select the "reports" button directly to the right (Figure 2.1, legend 2.1, label A). Selecting this button takes the user to the coral reef and fish report menu (See section 2.1.1).

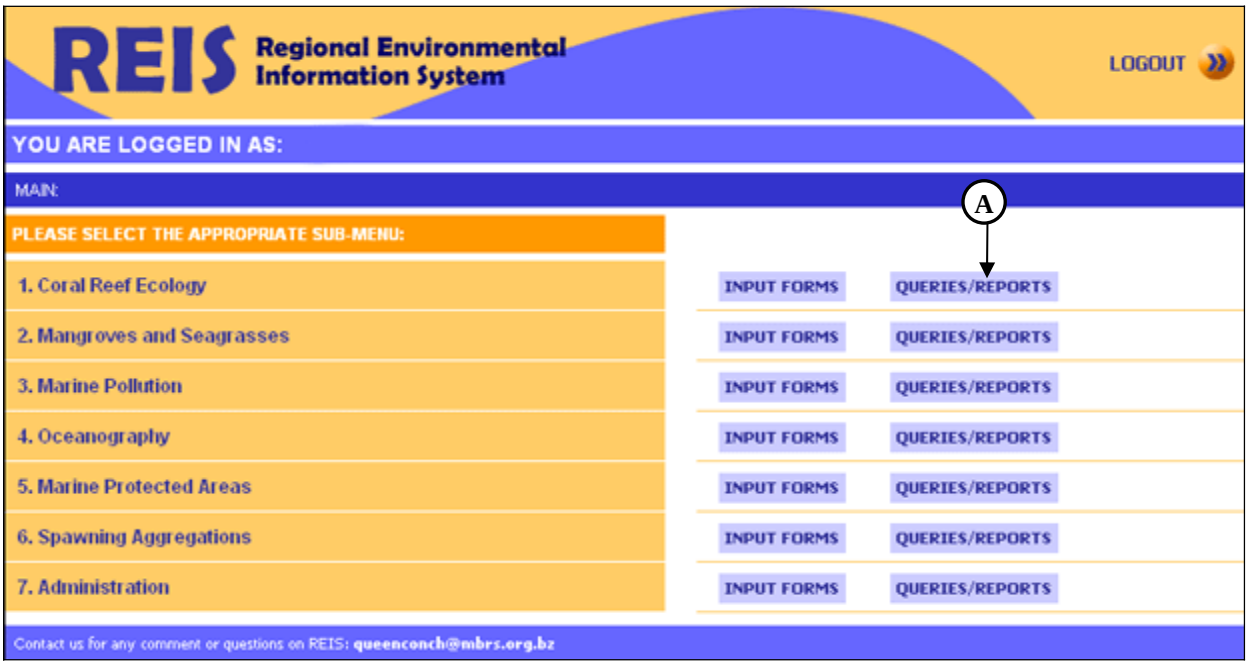


Figure 2.1. Report Menu

Legend 2.1 Legend for Figure 2.1

	Description
A	The buttons in this column connect the user to menu of reports for the data set listed.

2.1.1 Coral and fish reports

The coral and fish menu (Figure 2.1.1, Legend 2.1.1) contains the list of reports that are available to view or query. The fish and coral report categories are benthic data, point intercept transect data, adult fish data, fish recruitment data, rover diver data and manta tow data. A detailed description, explanation, and example are provided in Section 2.3 for each category of coral and fish query and report.

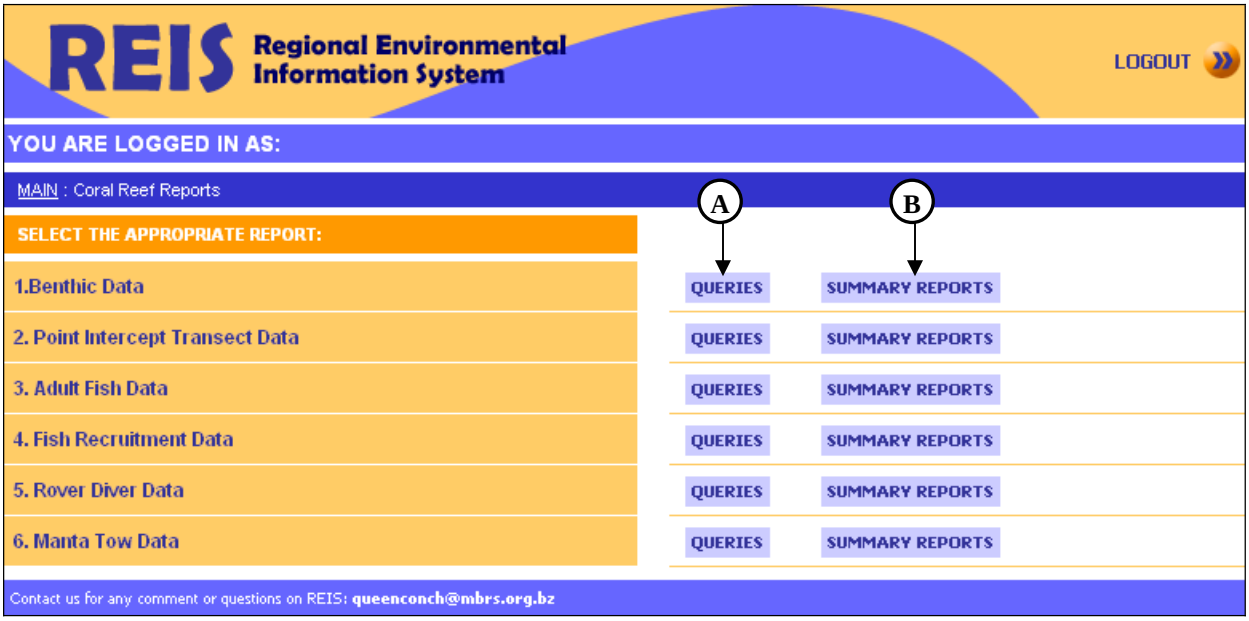


Figure 2.1.1 Coral and Fish Report Menu

Legend 2.1.1 Legend for Figure 2.1.1

	Description
A	The buttons in this column allow the user to construct a query on the detailed data for the data set listed
B	This buttons in this column connect the user to predefined summary reports on the dataset listed.

2.2 Query page

For each data grouping, the format and structure of the query page will be the same. The first task will be to select a field to query (Figure 2.2, Letter A). The fields available to query from will change depending on which data table is being accessed. The next task is to decide if the query should look for data that is equal, less than, greater than, not equal, or like (Figure 2.2, Letter B) the value entered (Figure 2.2, Letter C).

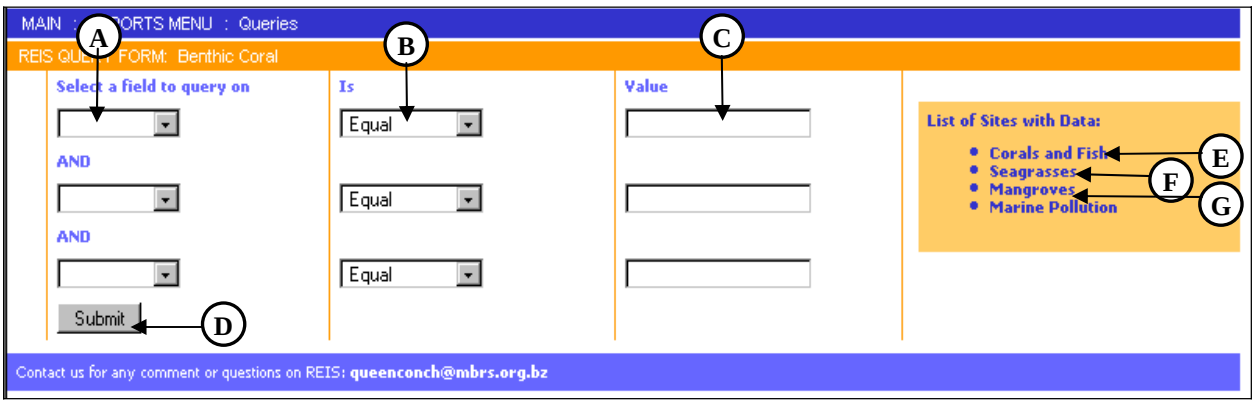


Figure 2.2 Sample Query

Legend 2.2 Legend for Figure 2.2

	Description
A	Select a field to query from.
B	Select equal, less than, greater than, not equal, or like from the pull down menu
C	Enter the value
D	Select the submit button to execute the query
E	Select this link to access a list of sites with coral and fish data
F	Select this link to access a list of sites with seagrass data
G	Select this link to access a list of sites with mangrove data

Wildcards can be used in the value field only if Like is selected as the comparison operator. A wildcard character is a symbol that stands for one or more characters in text searches. The database supports two wildcards: "_" and "%". The wildcard "_" matches any single character. The wildcard "%" matches one or more of any characters. The following expressions will all find Belize:

1) Country Equal Belize
2) Country Like Belize
3) Country Like _elize
4) Country Like %lize

But not:

5) Country Like _lize
6) Country Equal %lize

The items in the query field (Figure 2.2 Letter A), are based on each report form. The code for the items is in the list is given in the pages following this section. Descriptions of the items are given in the reports sections. The items common to all the reports are:

1) Country – The country in which the site is located.
2) Location – The name of the geographic feature on which the site is located, such as Banco Chinchorro.
3) Ecosystem – The ecosystem as defined by the Manual of methods for the MBRS Synoptic Monitoring Program. Currently the values are Coral, Mangrove, and Seagrass.
4) Habitat – The habitat within the ecosystem as defined by the Manual of methods for the MBRS Synoptic Monitoring Program. Currently the habitats are Shallow Fore Reef, Shallow Back Reef, Deep Fore Reef, Coastal, and Fringing.
5) Site_id – The unique site identifier.
6) Survey_id – The unique identifier for each survey. This is not usually used by the user.
7) Startdate – The date the sampling was conducted, or in the case of timed interval sampling such as mangrove leaf litter and seagrass growth the date the interval started.
8) Transect – The transect or plot number.
9) Collector – The person doing the field work collecting the data.

The following example shows how to create a query to select all the benthic coral data for the country of Belize.

1) Access the coral and fish report menu page (Figure 2.1, Letter A).
2) Select the benthic data "queries" button (Figure 2.1.1, Letter A).

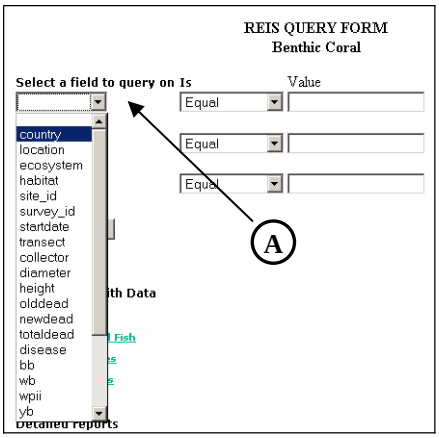


Figure 2.2a Selecting item to query on.

3) Select country from the **select a field to query on** menu (Figure 2.2a, Letter A).

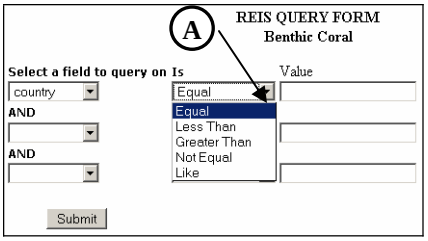


Figure 2.2b. Select comparison operator.

4) Select "Equal" from the pull down menu (Figure 2.2b, Letter A).

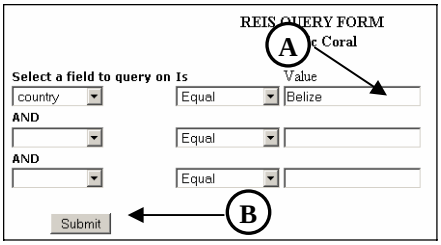


Figure 2.2c. Enter the value for comparison

5) Enter Belize in the value field (Figure 2.2c, Letter A).

6) Select the "submit" button (Figure 2.2c, Letter B).
7) An output report of benthic coral data should appear on the screen.

Up to three criteria can be used in querying the data. If the user wanted to further restrict the search parameters instead of selecting the "Submit" button in step 6 they would repeat steps 3 through 5, except using the second row of the query form. For example, if only data for Belize Deep Fore Reef environments was wanted the final query form would look like Figure 2.2d.

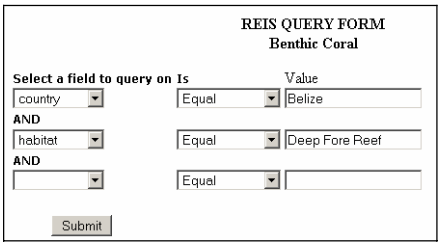


Figure 2.2d Query on two parameters.

Query Item Code List

Common for all Queries

Item	Code
Site ID	site_id
Date	startdate
Transect	transect
Person Collecting	collector
Supervisor	supervisor
Country	country
Location	location
Ecosystem	ecosystem
Habitat	habitat
Survey ID	Survey_id
Species Name	gen_spec

2.3.1 Benthic Coral Report

Item	Code
Diameter (cm)	diameter
Height (cm)	height
Old Dead (%)	olddead
Recent Dead (%)	newdead
Total Dead (%)	totaldead
Disease	disease
Black Band	bb
White Band	wb
White Plague II	wpii
Yellow Blotch	yb
Dark Spots I	dsi
Dark Spots II	dsii
Red Band	rb
Aspogikosis	asp
Other	other
Bleached	bleach

2.3.2 Point Intercept Report

Item	Code
Substrate Type	component
Count	benthcount
Comments	comments

2.3.3 Adult Fish Report

Item	Code
0-5 cm	cm0_5
6-10 cm	cm6_10
11-20 cm	cm11_20
21-30 cm	cm21_30
31-40 cm	cm31_40
>40 cm	cm41_

2.3.4 Fish Recruitment Report

Item	Code
Count	fishcount

2.3.5 Rover Diver Report

Item	Code
Abundance	abundance

2.3.6 Manta Tow Report

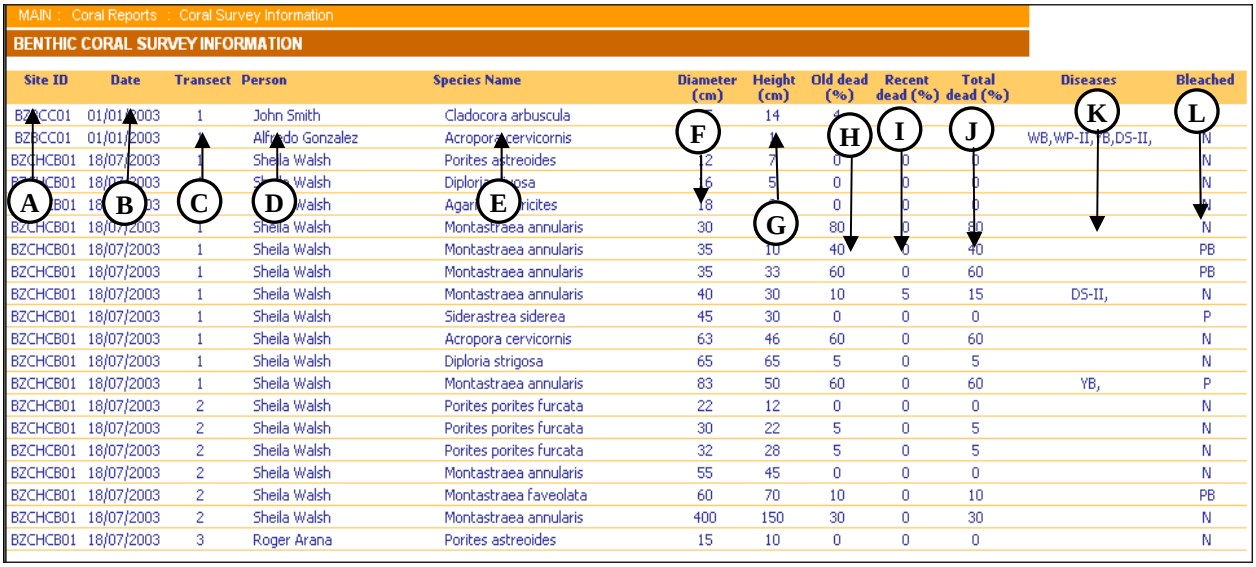
Item	Code
Tow Number	Tow
Live Coral	corallive
Dead Coral	coraldead
Soft Coral	softcoral
Algae	algae
Features	features

2.3 Coral and fish reports

The coral and fish reports enable the user to view and print the data that was entered via the data entry forms. The data can be viewed either by individual category (manta tow, adult fish, fish recruitment, rover diver, point intercept, and benthic coral), or by a list of sites that have surveys complete for each category (Figure 2.2, Letter E).

2.3.1 Benthic coral

An example report for benthic coral data is presented, as shown in Figure 2.3.1. The information included in the benthic coral data report is described in Legend 2.3.1. The reports specific query items are also shown in Legend 2.3.1



MAIN : Coral Reports : Coral Survey Information

BENTHIC CORAL SURVEY INFORMATION

Site ID	Date	Transect	Person	Species Name	Diameter (cm)	Height (cm)	Old dead (%)	Recent dead (%)	Total dead (%)	Diseases	Bleached
BZBCC01	01/01/2003	1	John Smith	Cladocora arbuscula		14					
BZBCC01	01/01/2003	1	Alfredo Gonzalez	Acropora cervicornis						WB,WP-II, YB,DS-II,	N
BZCHCB01	18/07/2003	1	Sheila Walsh	Porites astreoides	12	7	0	0	0		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Diploria strigosa	6	5	0	0	0		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Agaricia agaricites	18	8	0	0	0		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastraea annularis	30	10	80	0	80		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastraea annularis	35	10	40	0	40		PB
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastraea annularis	35	33	60	0	60		PB
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastraea annularis	40	30	10	5	15	DS-II,	N
BZCHCB01	18/07/2003	1	Sheila Walsh	Siderastrea siderea	45	30	0	0	0		P
BZCHCB01	18/07/2003	1	Sheila Walsh	Acropora cervicornis	63	46	60	0	60		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Diploria strigosa	65	65	5	0	5		N
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastraea annularis	83	50	60	0	60	YB,	P
BZCHCB01	18/07/2003	2	Sheila Walsh	Porites porites furcata	22	12	0	0	0		N
BZCHCB01	18/07/2003	2	Sheila Walsh	Porites porites furcata	30	22	5	0	5		N
BZCHCB01	18/07/2003	2	Sheila Walsh	Porites porites furcata	32	28	5	0	5		N
BZCHCB01	18/07/2003	2	Sheila Walsh	Montastraea annularis	55	45	0	0	0		N
BZCHCB01	18/07/2003	2	Sheila Walsh	Montastraea faveolata	60	70	10	0	10		PB
BZCHCB01	18/07/2003	2	Sheila Walsh	Montastraea annularis	400	150	30	0	30		N
BZCHCB01	18/07/2003	3	Roger Arana	Porites astreoides	15	10	0	0	0		N

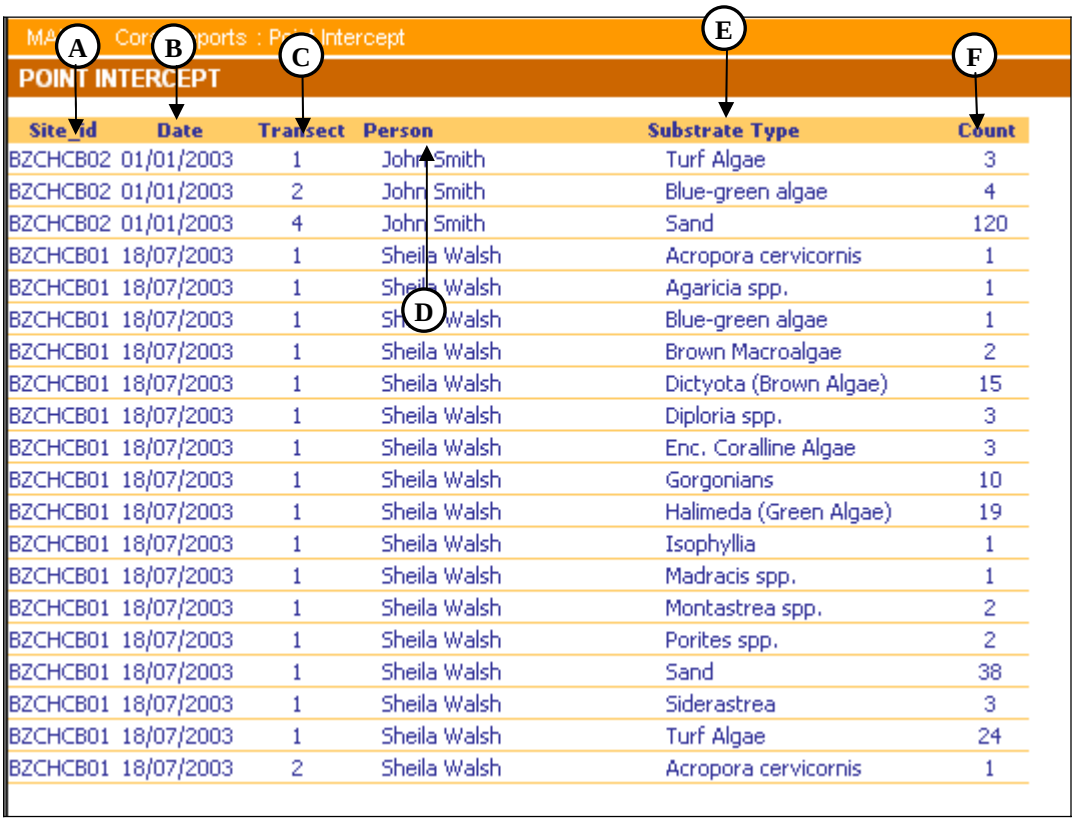
Figure 2.3.1 Benthic Coral Report

Legend 2.3.1 Legend for Figure 2.3.1.

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Species Name	The name of the coral species.
F	Diameter (cm)	The diameter of the coral head being measured.
G	Height (cm)	The height of the coral head being measured.
H	Old Dead (%)	The percent (1-100) of the coral that has been long dead.
I	Recent Dead (%)	The percentage (1-100) of the coral that has recently died.
J	Total Dead (%)	The total percentage (1-100) of the coral that had died.
K	Diseased	A code for the type of disease found on the coral.
L	Bleached	A code for the level of coral bleaching present.

2.3.2 Point intercept

To access the existing point intercept report (Figure 2.3.2, Legend 2.3.2), a query must be selected. For instruction on creating a query, refer to section 2.2. The query used to get the results shown in Figure 2.3.2 was a "site_id greater than 1". The point intercept query results include site ID, date, transect, person, substrate type, and count. Item descriptions for these results are found in Legend 2.3.2.



Site_id	Date	Transect	Person	Substrate Type	Count
BZCHCB02	01/01/2003	1	John Smith	Turf Algae	3
BZCHCB02	01/01/2003	2	John Smith	Blue-green algae	4
BZCHCB02	01/01/2003	4	John Smith	Sand	120
BZCHCB01	18/07/2003	1	Sheila Walsh	Acropora cervicornis	1
BZCHCB01	18/07/2003	1	Sheila Walsh	Agaricia spp.	1
BZCHCB01	18/07/2003	1	Sheila Walsh	Blue-green algae	1
BZCHCB01	18/07/2003	1	Sheila Walsh	Brown Macroalgae	2
BZCHCB01	18/07/2003	1	Sheila Walsh	Dictyota (Brown Algae)	15
BZCHCB01	18/07/2003	1	Sheila Walsh	Diploria spp.	3
BZCHCB01	18/07/2003	1	Sheila Walsh	Enc. Coralline Algae	3
BZCHCB01	18/07/2003	1	Sheila Walsh	Gorgonians	10
BZCHCB01	18/07/2003	1	Sheila Walsh	Halimeda (Green Algae)	19
BZCHCB01	18/07/2003	1	Sheila Walsh	Isophyllia	1
BZCHCB01	18/07/2003	1	Sheila Walsh	Madracis spp.	1
BZCHCB01	18/07/2003	1	Sheila Walsh	Montastrea spp.	2
BZCHCB01	18/07/2003	1	Sheila Walsh	Porites spp.	2
BZCHCB01	18/07/2003	1	Sheila Walsh	Sand	38
BZCHCB01	18/07/2003	1	Sheila Walsh	Siderastrea	3
BZCHCB01	18/07/2003	1	Sheila Walsh	Turf Algae	24
BZCHCB01	18/07/2003	2	Sheila Walsh	Acropora cervicornis	1

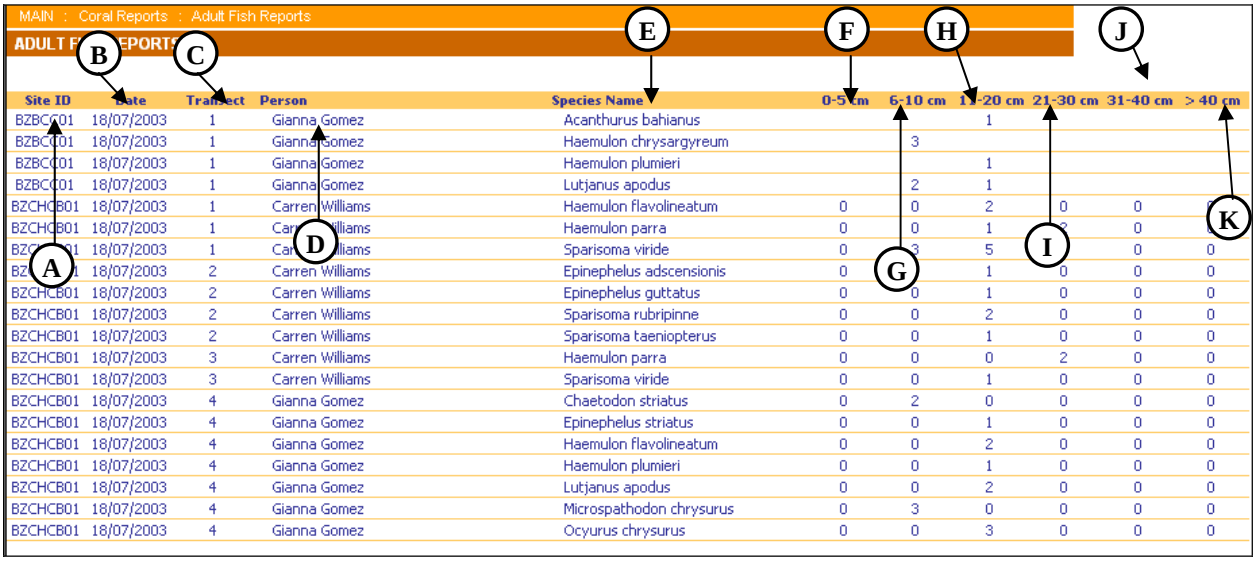
Figure 2.3.2 Point Intercept Report

Legend 2.3.2 Legend for Figure 2.3.2

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Substrate Type	A pull down menu of possible benthic types.
F	Count	The number of occurrences for the benthic type identified along the transect.

2.3.3 Adult Fish

In order to access the adult fish report (Figure 2.3.3, Legend 2.3.3), a query must first be selected. For instruction on creating a query, refer to section 2.2. The items in the adult fish report are site id, date, transect, person, species name, and sizes 0-5 cm, 6-10 cm, 11-20 cm, 21-30 cm, 31-40 cm, and >40 cm. The item descriptions are found in Legend 2.3.3.



Site ID	Date	Transect	Person	Species Name	0-5 cm	6-10 cm	11-20 cm	21-30 cm	31-40 cm	> 40 cm
BZBCC01	18/07/2003	1	Gianna Gomez	Acanthurus bahianus			1			
BZBCC01	18/07/2003	1	Gianna Gomez	Haemulon chrysargyreum		3				
BZBCC01	18/07/2003	1	Gianna Gomez	Haemulon plumieri			1			
BZBCC01	18/07/2003	1	Gianna Gomez	Lutjanus apodus		2	1			
BZCHCB01	18/07/2003	1	Carren Williams	Haemulon flavolineatum	0	0	2	0	0	
BZCHCB01	18/07/2003	1	Carren Williams	Haemulon parra	0	0	1	0	0	
BZCHCB01	18/07/2003	1	Carren Williams	Sparisoma viride	0	3	5	0	0	0
BZCHCB01	18/07/2003	2	Carren Williams	Epinephelus adscensionis	0	0	1	0	0	0
BZCHCB01	18/07/2003	2	Carren Williams	Epinephelus guttatus	0	0	1	0	0	0
BZCHCB01	18/07/2003	2	Carren Williams	Sparisoma rubripinne	0	0	2	0	0	0
BZCHCB01	18/07/2003	2	Carren Williams	Sparisoma taeniopterus	0	0	1	0	0	0
BZCHCB01	18/07/2003	3	Carren Williams	Haemulon parra	0	0	0	2	0	0
BZCHCB01	18/07/2003	3	Carren Williams	Sparisoma viride	0	0	1	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Chaetodon striatus	0	2	0	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Epinephelus striatus	0	0	1	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Haemulon flavolineatum	0	0	2	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Haemulon plumieri	0	0	1	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Lutjanus apodus	0	0	2	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Microspathodon chrysurus	0	3	0	0	0	0
BZCHCB01	18/07/2003	4	Gianna Gomez	Ocyurus chrysurus	0	0	3	0	0	0

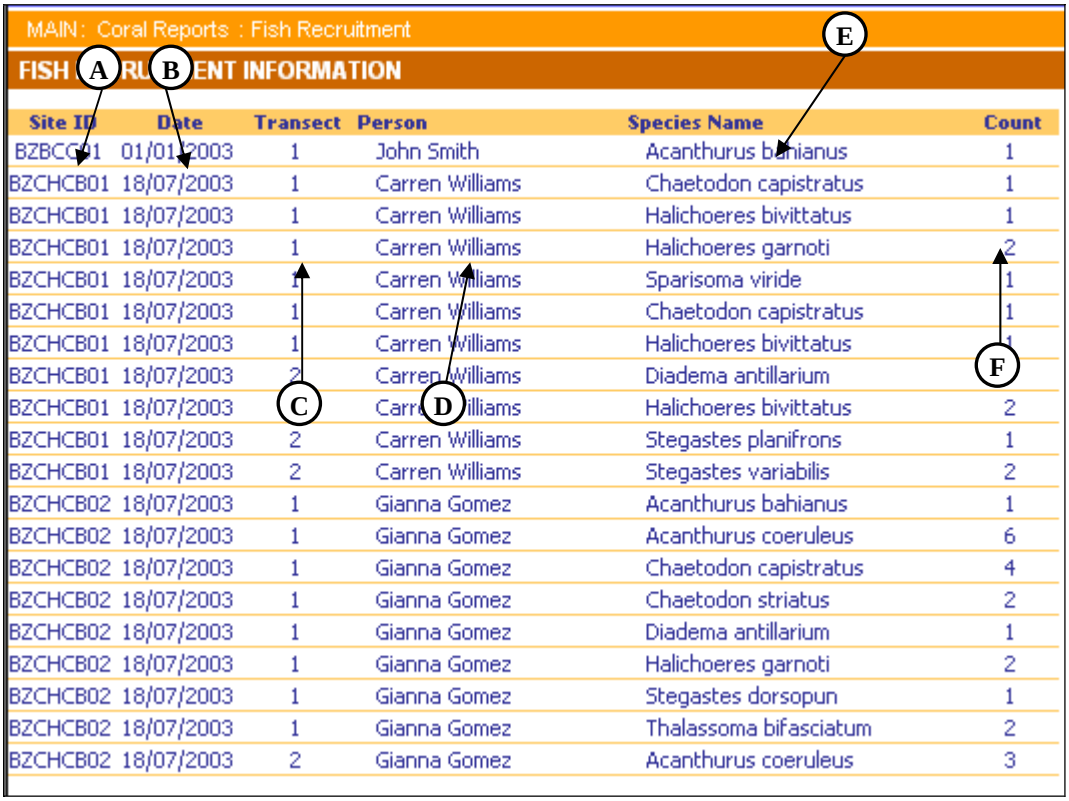
Figure 2.3.3 Adult Fish Report

Legend 2.3.3 Legend for Figure 2.3.3

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Species Name	Name of the species identified.
F	0-5 cm	Count for the size range from 0 to 5 cm for the species
G	6-10 cm	Count for the size range from 6 to 10 cm for the species
H	11-20 cm	Count for the size range from 11 to20 cm for the species
I	21-30 cm	Count for the size range from 21 to 30 cm for the species
J	31-40 cm	Count for the size range from 31 to 41 cm for the species
K	> 40cm	Count for the size range greater than 40 cm for the species

2.3.4 Fish Recruitment

To access the fish recruitment report (Figure 2.3.4, Legend 2.3.4), select a query from the fish recruitment query page (Section 2.2). The items included in the fish recruitment report are the site id, date, transect, person, species name, and count. Refer to Legend 2.3.4 for item descriptions.



Site ID	Date	Transect	Person	Species Name	Count
BZBCG01	01/01/2003	1	John Smith	Acanthurus bahianus	1
BZCHCB01	18/07/2003	1	Carren Williams	Chaetodon capistratus	1
BZCHCB01	18/07/2003	1	Carren Williams	Halichoeres bivittatus	1
BZCHCB01	18/07/2003	1	Carren Williams	Halichoeres garnoti	2
BZCHCB01	18/07/2003	1	Carren Williams	Sparisoma viride	1
BZCHCB01	18/07/2003	1	Carren Williams	Chaetodon capistratus	1
BZCHCB01	18/07/2003	1	Carren Williams	Halichoeres bivittatus	1
BZCHCB01	18/07/2003	2	Carren Williams	Diadema antillarium	1
BZCHCB01	18/07/2003	2	Carren Williams	Halichoeres bivittatus	2
BZCHCB01	18/07/2003	2	Carren Williams	Stegastes planifrons	1
BZCHCB01	18/07/2003	2	Carren Williams	Stegastes variabilis	2
BZCHCB02	18/07/2003	1	Gianna Gomez	Acanthurus bahianus	1
BZCHCB02	18/07/2003	1	Gianna Gomez	Acanthurus coeruleus	6
BZCHCB02	18/07/2003	1	Gianna Gomez	Chaetodon capistratus	4
BZCHCB02	18/07/2003	1	Gianna Gomez	Chaetodon striatus	2
BZCHCB02	18/07/2003	1	Gianna Gomez	Diadema antillarium	1
BZCHCB02	18/07/2003	1	Gianna Gomez	Halichoeres garnoti	2
BZCHCB02	18/07/2003	1	Gianna Gomez	Stegastes dorsopun	1
BZCHCB02	18/07/2003	1	Gianna Gomez	Thalassoma bifasciatum	2
BZCHCB02	18/07/2003	2	Gianna Gomez	Acanthurus coeruleus	3

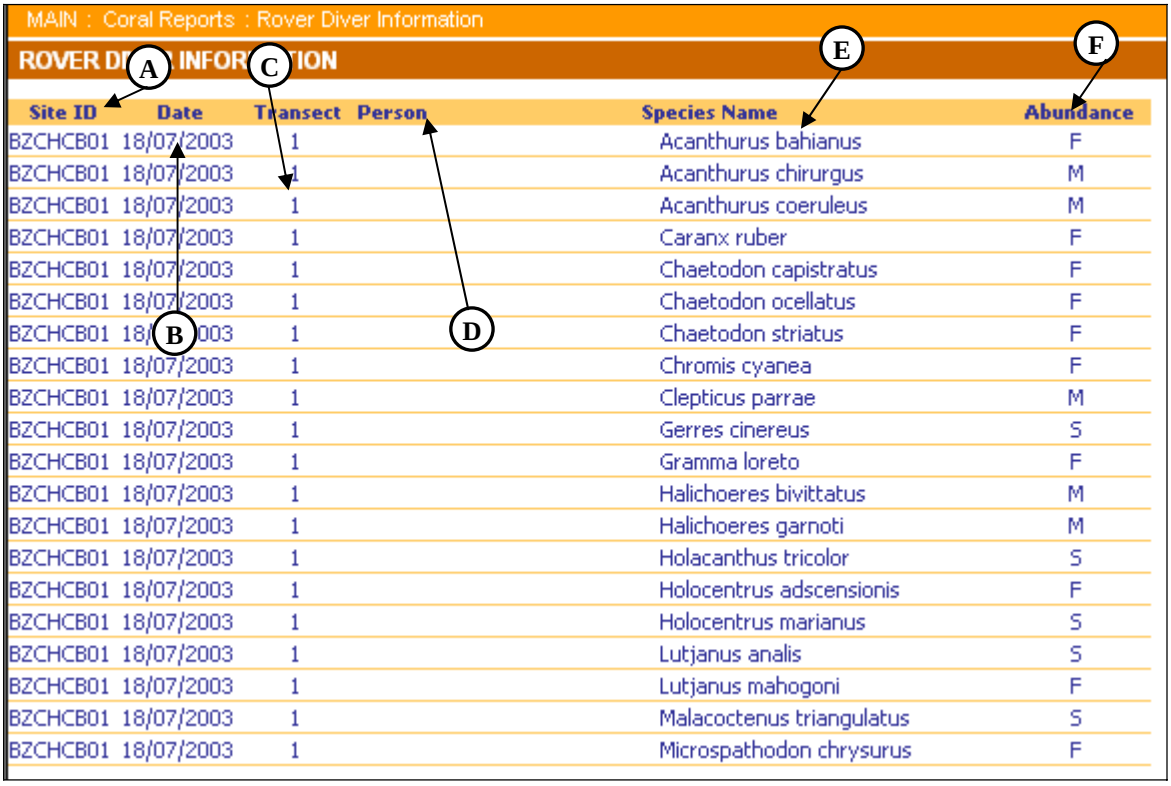
Figure 2.3.4 Fish Recruitment Report

Legend 2.3.4 Legend for Figure 2.3.4

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Species Name	Name of the species identified.
F	Count	The count of the fish species identified during the survey.

2.3.5 Rover Diver

To access the rover diver report (Figure 2.3.5, Legend 2.3.5), select a query from the rover diver query page (Section 2.2). The items included in the rover diver report are the site id, date, transect, person, species name, and abundance. Item descriptions for the report data are listed in Legend 2.3.5.



Site ID	Date	Transect	Person	Species Name	Abundance
BZCHCB01	18/07/2003	1		Acanthurus bahianus	F
BZCHCB01	18/07/2003	1		Acanthurus chirurgus	M
BZCHCB01	18/07/2003	1		Acanthurus coeruleus	M
BZCHCB01	18/07/2003	1		Caranx ruber	F
BZCHCB01	18/07/2003	1		Chaetodon capistratus	F
BZCHCB01	18/07/2003	1		Chaetodon ocellatus	F
BZCHCB01	18/07/2003	1		Chaetodon striatus	F
BZCHCB01	18/07/2003	1		Chromis cyanea	F
BZCHCB01	18/07/2003	1		Clepticus parrae	M
BZCHCB01	18/07/2003	1		Gerres cinereus	S
BZCHCB01	18/07/2003	1		Gramma loreto	F
BZCHCB01	18/07/2003	1		Halichoeres bivittatus	M
BZCHCB01	18/07/2003	1		Halichoeres garnoti	M
BZCHCB01	18/07/2003	1		Holacanthus tricolor	S
BZCHCB01	18/07/2003	1		Holocentrus adscensionis	F
BZCHCB01	18/07/2003	1		Holocentrus marianus	S
BZCHCB01	18/07/2003	1		Lutjanus analis	S
BZCHCB01	18/07/2003	1		Lutjanus mahogoni	F
BZCHCB01	18/07/2003	1		Malacoctenus triangulatus	S
BZCHCB01	18/07/2003	1		Microspathodon chrysurus	F

Figure 2.3.5 Rover Diver Report

Legend 2.3.5 Legend for Figure 2.3.5

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Species Name	Name of the species identified.
F	Abundance	A one-letter code for the number of individuals seen for the species. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4 for a description of the codes.

2.3.6 Manta tow

In order to access the existing manta tow report (Figure 2.3.6, Legend 2.3.6), a query must first be selected. For instruction on creating a query, refer to section 2.2. The items in the manta tow report are site id, date, transect, person, tow number, live coral, dead coral, soft coral and algae. For item descriptions see Legend 2.3.6.

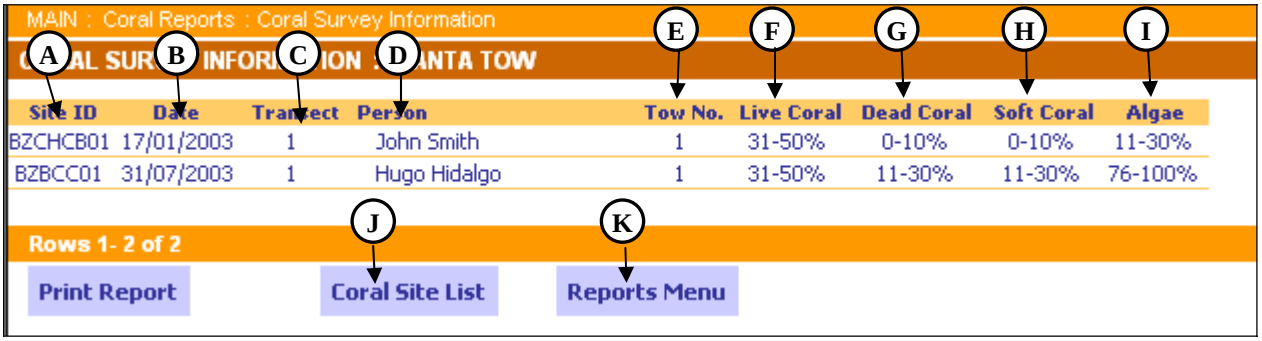


Figure 2.3.6 Manta Tow Report

Legend 2.3.6 Items for Manta tow report

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person	Name of the person that collected data.
E	Tow Number	The number of the tow being recorded.
F	Live Coral (0-5)	The percentage of live coral.
G	Dead Coral (0-5)	The percentage of dead coral.
H	Soft Coral (0-5)	The percentage of soft coral.
I	Algae (0-5)	The percentage of algae.
J	Coral Site List	This button connects the user with a list of all sites with coral data.
K	Reports Menu	This button connects the user with the main menu page for this report.

CONSERVATION AND SUSTAINABLE USE OF THE MESOAMERICAN BARRIER REEF SYSTEMS PROJECT (MBRS)

SAM / MBRS

User Manual

for the

Regional Environmental Information System

Volume III : Mangrove and Seagrass Ecology

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CONTENTS **PAGE**

1 DATA ENTRY

This chapter is designed to provide the user with step-by-step instructions necessary for entering the field data into the database via web-based data entry forms. To enhance this user guide, the brief explanation for each data entry form includes an introduction, objective, structure, item descriptions, legend, screenshots, and any other information deemed useful to the user. For each data entry form several elements, primarily those for navigation, remain the same. Those elements are shown in Figure 1.0 and described in Legend 1.0. The items identified in Figure 1.0 will not be identified on any subsequent pages.

Note: The screenshots used in this chapter, were created from a temporary database and the data shown in the screenshots should not be considered applicable to the MBRS project. There may be differences between the actual online form and the screenshots in this manual.

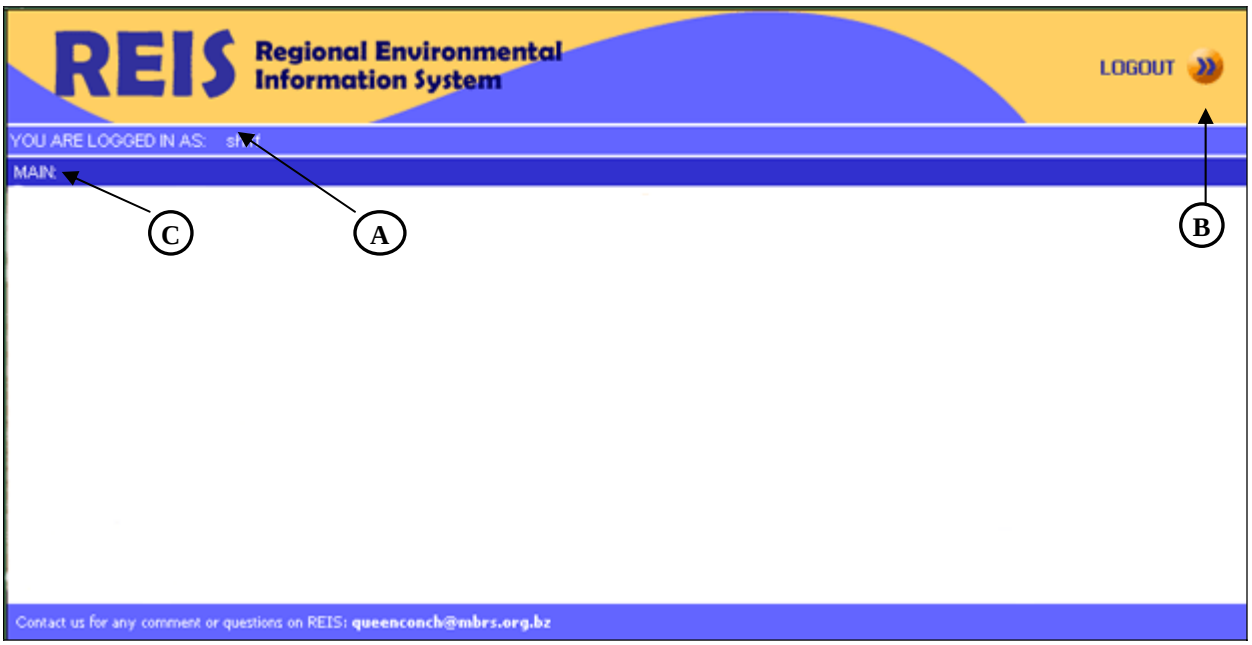


Figure 1.0. Basic elements for each data entry page.

Legend 1.0. Legend for Figure 1.0

	Description
A	Indicates the name of the person currently logged into the REIS private database.
B	This button will log the user out of the REIS private database.
C	This section serves as a navigation aid to what page the user is accessing, as well as links to previous levels.

1.1 Login/Menu Pages

When first accessing the system the user will be presented with a login page as shown in Figure 1.1a with navigation explained in Legend 1.1a. The users' login name and password are provided to the user by the MBRS database administrator. To access the site the user must have cookies and Java enabled on their browser.

Figure 1.1a. User login page.

Legend 1.1a. Legend for Figure 1.1a

	Description
A	This is where the user enters the login name provided by the MBRS database administrator.
B	This is where the user enters the password provided by the MBRS database administrator.
C	This submits the login and if valid connects the user to the menu page.

Once the user has successfully logged onto the MBRS system, the user is taken to the main menu page. A sample menu page is shown in Figure 1.1b with navigation explained in Legend 1.1b. There are seven main thematic areas found within this REIS database. These thematic areas are coral reef ecology, mangroves and seagrasses, marine pollution, oceanography, marine protected areas, spawning aggregations, and administration. This chapter discusses the input forms for the Mangrove and Seagrasses thematic area. From this menu page, the user can access the data entry forms (Chapter 1) and reports (Chapter 2). Refer to chapter 2 for report details.

To access the data entry forms for any of the thematic areas, select the INPUT FORMS button associated with that thematic area. For example, to access the thematic area 'Mangroves and Seagrasses', select the INPUT FORMS button directly to the right (Figure 1.1b, Legend 1.1b, label B). Selecting this button takes the user to the Mangroves and Seagrasses forms menu (See section 1.1.1).

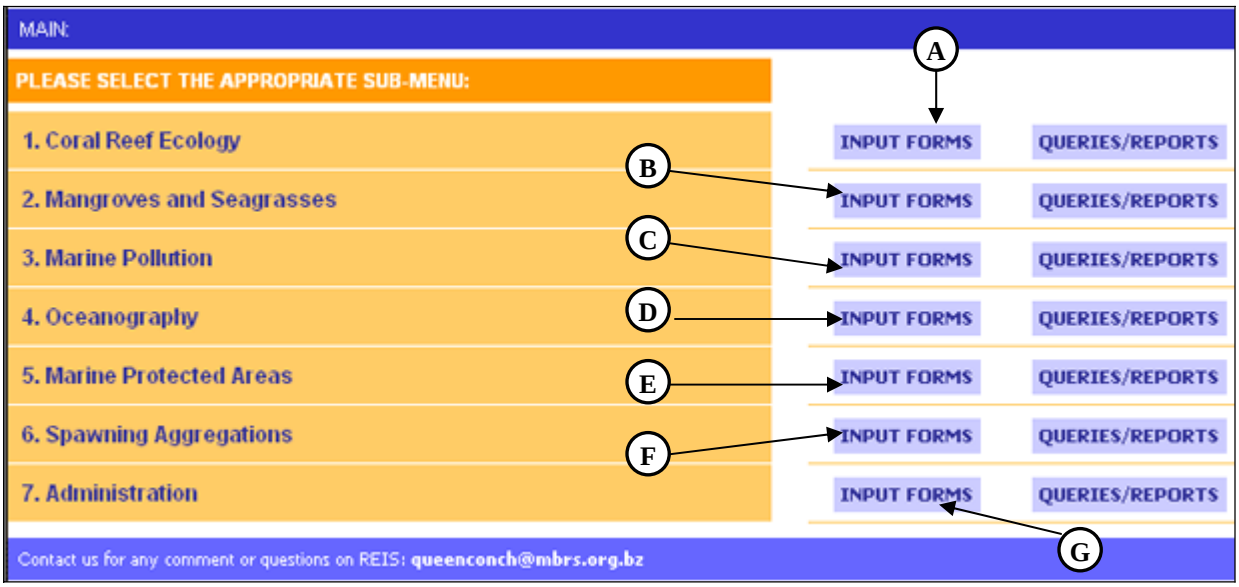


Figure 1.1b. Menu form.

Legend 1.1b. Legend for Figure 1.1b

	Description
A	Menu of coral reef ecology data entry forms.
B	Menu of mangrove and seagrass data entry forms.
C	Menu of marine pollution and oceanography data entry forms.
D	Menu of oceanography data entry forms. (Not yet implemented)
E	Menu of marine protected areas data entry forms. (Not yet implemented)
F	Menu of spawning aggregation data entry forms. (Not yet implemented)
G	Menu of administration data entry forms. (Must have administrative privileges.)

1.1.1 Mangrove and Seagrass forms Menu

There are six mangrove and three seagrass data entry forms to choose from (Figure 1.1.1, Legend 1.1.1). The mangrove data entry forms are characterization and zonation, forest structure, seedling and sapling, seedling and sapling biomass, interstitial water, and leaf litter, as discussed in section 1.3. The seagrass forms are seagrass growth, seagrass biomass, and seagrass leaf area index, as discussed in section 1.4. To begin entering mangrove and seagrass survey data, use the NEW SURVEY and EXISTING SURVEY buttons.

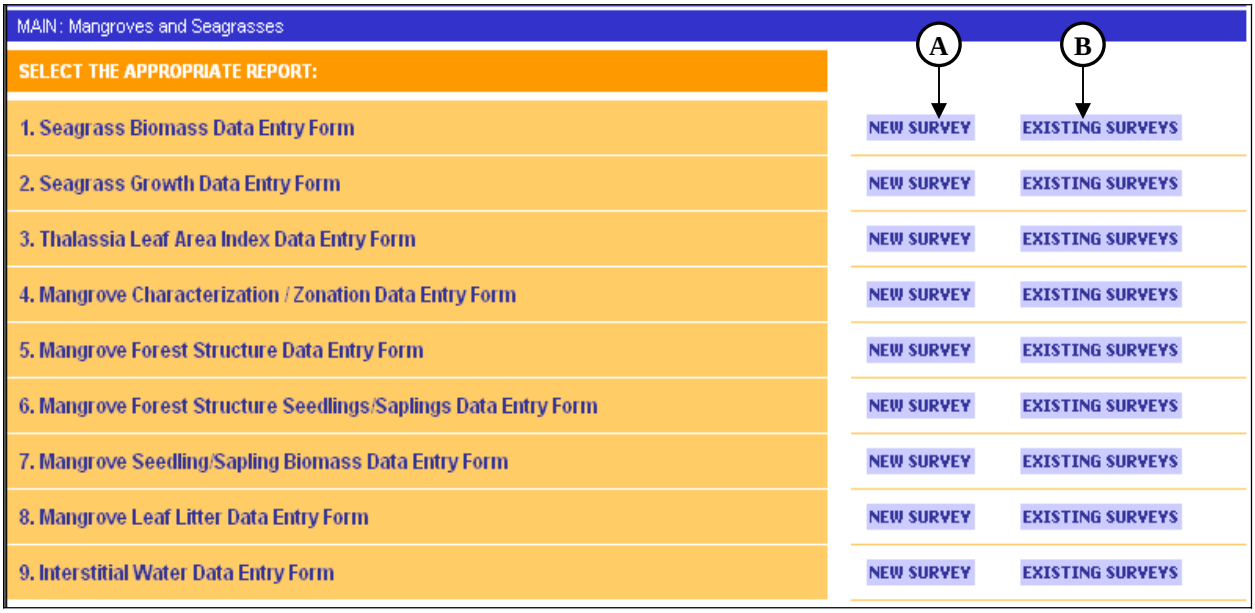


Figure 1.1.1. Mangrove and Seagrass forms Menu

Legend 1.1.1. Legend for Figure 1.1.1.

	Description
A	This column of buttons connects the user to the new survey entry form for the dataset listed
B	This column of buttons connects the user to the list of data surveys that currently exist for the dataset listed.

1.2 Survey and Transect Forms

The following procedures apply to the Mangrove and Seagrasses Forms (Sections 1.3 -1.4). This section provides instructions on how to get through this procedure to access the data entry forms. In all of the data entry forms required fields are marked with an asterisk.

The objective of the survey forms is to record the detailed sampling information that describes the physical conditions at the time of the survey and other information describing the survey itself. The survey items are listed and discussed in Table 1.2. There is one survey record for each site visit, for each set of data collected.

Table 1.2. Survey Item Descriptions

Item Name	Required	Item Description
Site ID	Yes	Site ID is an identifier used to relate information from the survey table to the site table.
Person Collecting	Yes	The name of the individual conducting the survey in the field.
Person Processing		The name of the individual processing the samples in the lab.
Tide	Yes	The tidal stage at the time of the sampling. The valid values are low, high, falling, and rising. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of the tidal stages.
Cloud Cover (0-8)		The cloud cover in eighths of sky covered (0-8) at the time of the sampling. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of values 0 through 8.
Current Speed		The water current speed at the time of sampling
Start Date (MM/DDMYY)	Yes	Either he beginning date of a timed sampling, such as leaf litter or seagrass growth, or the date of sampling.
End Date (MM/DDMYY)		The end date of a timed sampling, such as leaf litter or seagrass growth.
Start Time (HH:MM)	Yes	Time at which sampling was started.
Sea State	Yes	The sea state at the time of the sampling. The valid values are calm, slight, moderate, and rough. Refer to the "Manual of Methods for Synoptic Monitoring Technical Document No. 4" for a description of valid values.
Air Temp (°C)		The air temperature at the time of sampling.
Wind		The estimated wind speed at the time of sampling.
Secchi At Marking		The secchi value at the time of the first visit to the site. This is used only for the seagrass growth surveys.
Secchi At Collection		The secchi value at the time of the last visit to the site. This is used only for the seagrass growth surveys.
Current Direction		The direction of the water current at the time of sampling.

1.2.1 Entering Survey data

To enter a new survey for a thematic area, select the NEW SURVEY button (i.e. Mangrove and Seagrasses forms> Figure 1.1.1, Legend 1.1.1, Letter A), found on the forms menu for that thematic area (Figure 1.2.1, Legend 1.2.1). Note: One site may have multiple surveys. A survey record needs to be completed for each type of survey being conducted (i.e. point intercept and benthic coral) at a site. After the survey data has been entered the user will be taken to the Survey List page (Section 1.2.3).

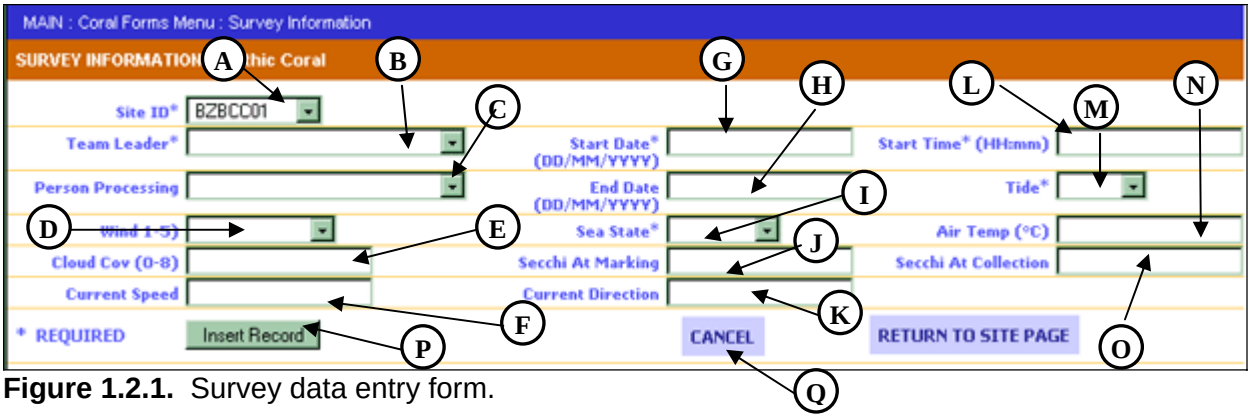


Figure 1.2.1. Survey data entry form.

Legend 1.2.1. Survey entry data: Legend for Figure 1.2.1

	Description
A	Select a site ID from the pull down menu
B	Select the name of the person who collected the data from the pull down menu
C	Select the name of the person who processed the data in the lab. This is to be left blank if no laboratory analysis was done.
D	Select the wind speed at the time of sampling from the pull down menu.
E	Enter a value 0-8 for the cloud cover present at the time of the sampling.
F	Enter the water current speed. This is an optional field.
G	Enter the date of the sampling or the start date for a timed interval sampling such as seagrass growth or leaf litter.
H	Enter the end date of the sampling. This will be the same as the start date unless it is a timed interval sampling such as seagrass growth or leaf litter.
I	Select a value from the pull down menu that represents the sea state at the time of the sampling.
J	Enter the secchi value at the time of marking the seagrasses. (For seagrass growth surveys only.)
K	Enter the direction of the water current at the time of sampling
L	Enter the time sampling started for the survey.
M	Select the tidal stage, at the time of the survey, from the pull down menu.
N	Enter the air temperature at the time of sampling
O	Enter the secchi value at the time of collecting the seagrasses. (For seagrass growth surveys only.)
P	Select this button to insert this data into the database. This will take the user to the survey information form (Figure 1.2.3a).
Q	Use the cancel button to clear the form without entering the data into the database

1.2.2 Editing Survey data

Use the survey edit form (Figure 1.2.2, Legend 1.2.2) to alter existing survey data. Existing survey data should be altered only if there was an error in the original data entry for the survey, or if there was missing data in the original form. The existing values will show up in the field when the edit form is opened. The survey data edit form is accessed from within a thematic area. The items and item descriptions for the edit survey form are listed in Table 1.2.

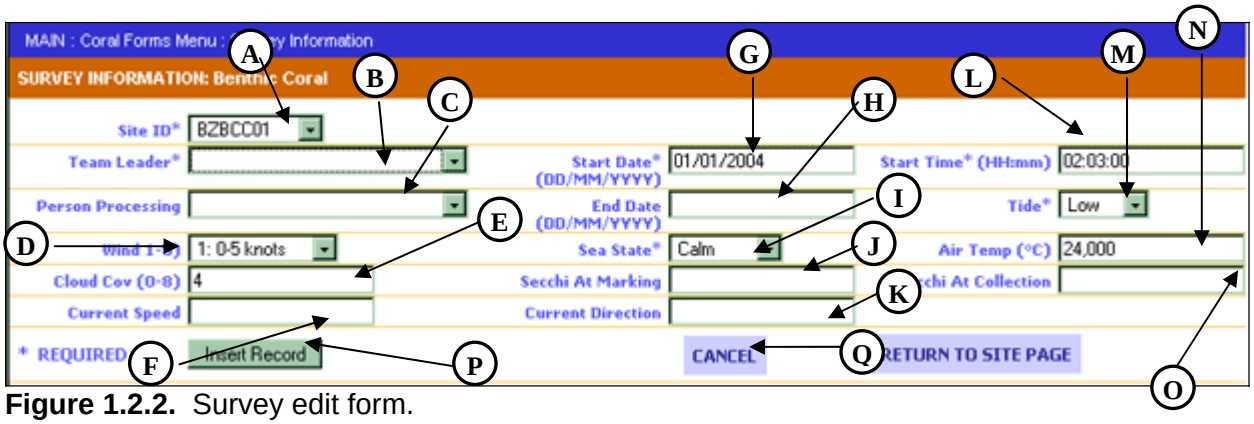


Figure 1.2.2. Survey edit form.

Legend 1.2.2. Edit Survey Data: Legend for Figure 1.2.2

	Description
A	The site ID cannot be changed during the edit procedure
B	Edit the name of the person who collected the data from the pull down menu. If you do not want to change the person, leave this as “no change”.
C	Edit the name of the person who is processing the data. If you do not want to change the person, leave this as “no change”.
D	Edit the wind speed at the time of sampling
E	Edit the cloud cover present at the time of the sampling.
F	Edit the water current speed
G	Edit the start date of the sampling
H	Edit the end date of the sampling
I	Edit the sea state at the time of the sampling.
J	Edit the secchi value at the time of marking the seagrass.
K	Edit the direction of the water current at the time of sampling
L	Edit start the time of the first sampling
M	Edit the tidal stage at the time the data was collected
N	Edit the air temperature at the time of sampling
O	Edit the secchi value at the time of seagrass collection.
P	Select this button to update this edited data in the database
Q	Use the “Cancel” button to cancel the editing and return to the previous page.

1.2.3 Survey List

The Survey List page (Figure 1.2.3a, Legend 1.2.3a) lists all of the surveys for the site shown for the dataset that was originally selected. From this list the user can add or edit survey data, refer to section 1.2.1 or section 1.2.2. Otherwise, select the survey to add data by selecting the SELECT button (Figure 1.2.3a, Legend 1.2.3a, Letter L). This will take the user to the transect page.

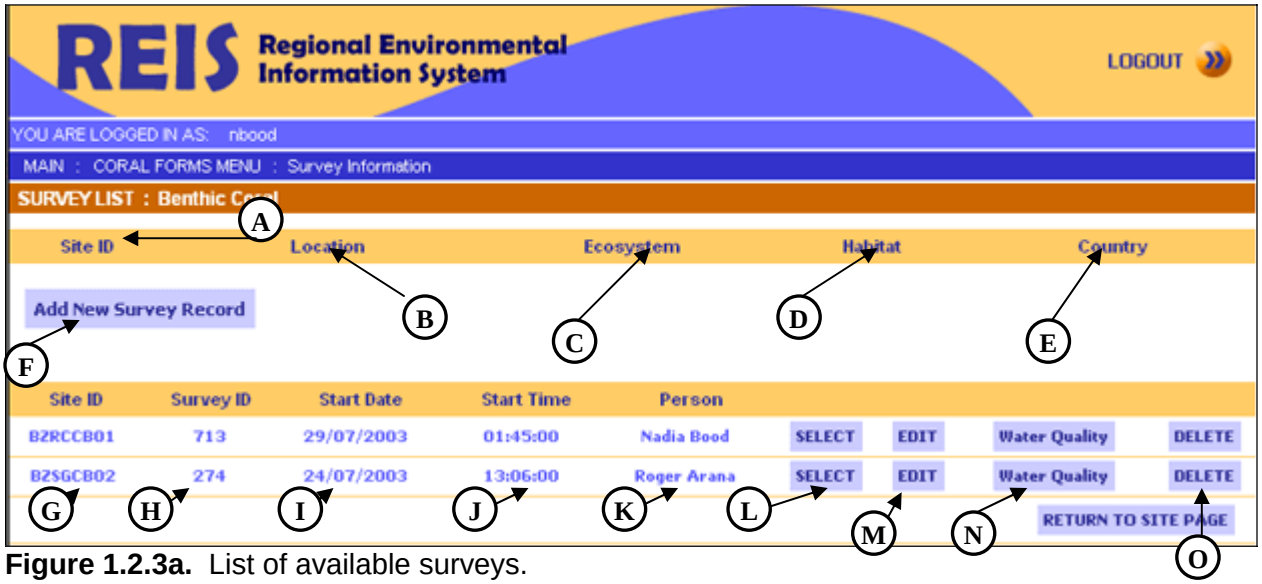


Figure 1.2.3a. List of available surveys.

Legend 1.2.3a. Legend for figure 1.2.3a

	Description
A	The site ID
B	The location of the site
C	The ecosystem
D	The habitat type
E	The country in which the site is located.
F	Select to add a new survey to this site
G	The site ID
H	The survey ID. This is displayed for reference purposes only.
I	The start date.
J	The start time.
K	The person who collected the data.
L	Select this button to go to the transect form for this survey (i.e. Benthic coral data)
M	Select this button to edit the survey information
N	Select this button to add water quality records to this survey.
O	Select this button to delete this survey

If the EXISTING SURVEY button was used at the thematic area menu an intermediate form (Figure 1.2.3b, Legend 1.2.3b) will be brought up, from which the user selects a site to add the data to. If the user does not know the site id, then all of the surveys for that thematic area can be listed by clicking on SELECT ALL. Once the site is selected, the survey list page is shown (Figure 1.2.3a, Legend 1.2.3a).

Figure 1.2.3b. Intermediate form.

Legend 1.2.3b. Legend for Figure 1.2.3b

	Description
A	Select an existing site from the pull down menu.
B	Select all survey records for the current thematic area

1.2.4 Transect Data

The transect form (Figure 1.2.4, Legend 1.2.4) is used to identify only transect specific information such as transect or plot number, person surveying the transect or plot, and in the case of coral reefs the start and end depths of the transect. The transect items are listed and discussed in Table 1.2.4.

Table 1.2.4 Transect Item Descriptions

Item Name	Required	Item Description
Transect No	Yes	The transect or plot number associated with the sampling. It is possible to have multiple transects per station per day. Note: To enter multiple transects per day, complete this form for each transect associated with this survey site.
Person Collecting	Yes	The name of the individual conducting the survey in the field.
Start Time (HH:MM)		Time at which sampling was started.
Start Depth (m)		The water depth in meters at the start of the coral transect. This field is only used for coral transects
Stop Depth (m)		The water depth in meters at the end of the coral transect. This field is only used for coral transects.
Bearing (0-360)		Heading in degrees from north of the transect line from the shoreline. Used for mangrove forest zonation.

If the appropriate transect is listed, use the SELECT button to access the data form. If not listed then add a new transect in the bottom line of the form. The new transect must be inserted before a data entry form based on that transect can be accessed. The select button on the transect form will take the user to the data entry form (i.e. Figure 1.3.2a).

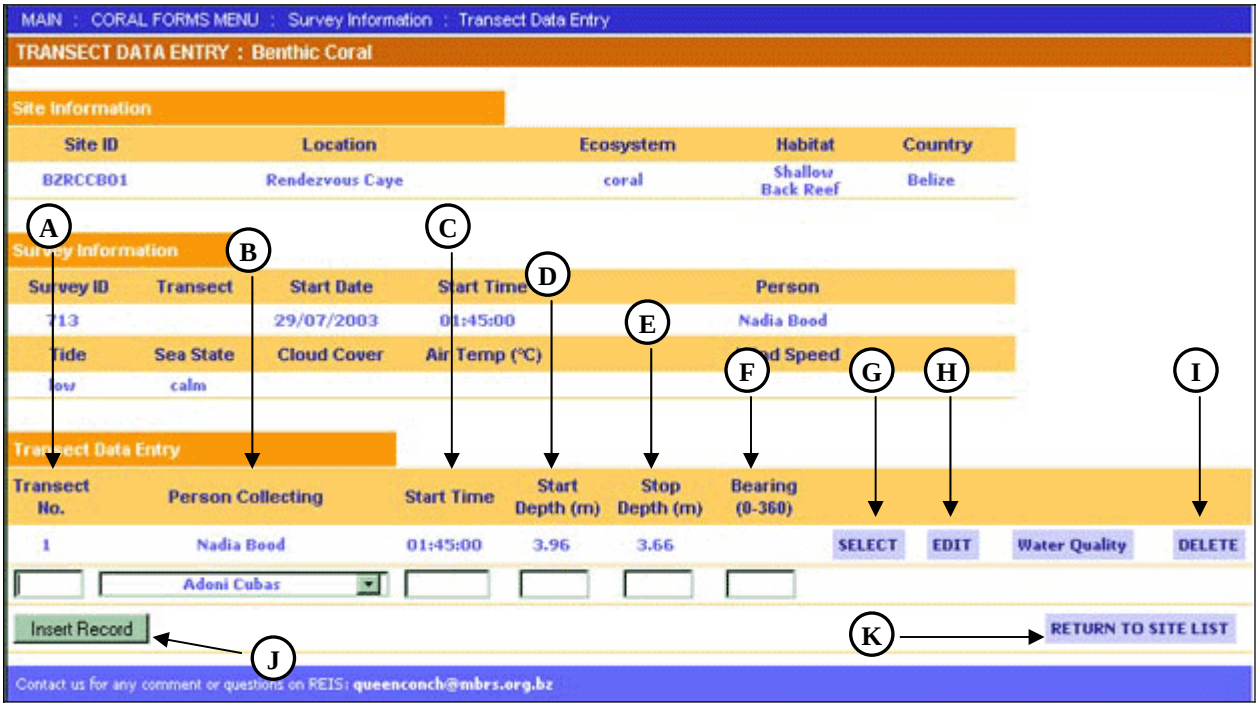


Figure 1.2.4. Transect data entry form.

Legend 1.2.4. Transect Data Entry: Legend for 1.2.4.

	Description
A	Enter the transect or plot number.
B	Select the name of the person who collected the data from the pull down menu. This may be the same person that was entered in the survey form.
C	Enter the time the transect survey was started.
D	Enter the depth at the start of the transect. This is used only for benthic coral.
E	Enter the depth at the end of the transect. This is used only for benthic coral.
F	Enter the transect bearing. Used for mangrove forest zonation.
G	Use the select button to access the data entry form.
H	Use the edit button to edit the transect record.
I	Use the delete button to delete the transect record.
J	Use insert record to insert the data into the table. When a new transect is entered it must be inserted before a data entry page based on the transect can be selected.
K	Use the "Return to Site Page" button to clear the fields and return to the site page listing all of the surveys.

1.3 Mangrove Forms

The mangrove and seagrass forms menu (Figure 1.1.1) lists both the mangrove and seagrass forms available for data entry. Refer to section 1.4 for the specifics on the seagrass forms. Continuing from Section 1.1.1, the six mangrove data entry forms available are characterization/zonation, forest structure, seedling/sapling, seedling/sapling biomass, interstitial water, and leaf litter. To access the data entry form for any of the mangrove data entry forms, the user must select either the NEW SURVEY or EXISTING SURVEY button. Then follow the steps outlined in section 1.2.

1.3.1 Characterization/zonation

The mangrove characterization and zonation forms enable the user to input the field-collected mangrove characterization and zonation data into the MBRS database. The items in the mangrove characterization/zonation table are point distance, quadrant, start x, start y, bearing, species, distance, CBH, height, and observations. Refer to Table 1.3.1 for these item descriptions.

Table 1.3.1. Characterization/zonation Items Decription.

Item Name	Required	Item Description
Point Distance (m)	Yes	Distance from the origin of the centerline to the point
Quadrant	Yes	The number of the quadrant
Bearing (0-360)	Yes	The bearing
Species	Yes	The name of the species
Distance (m)	Yes	The distance from the center point of the quadrant
CBH (cm)	Yes	The circumference of the tree at breast height
Height (m)	Yes	The height of the tree
Observations		Any additional comments or observations

ADD

To add a record to the mangrove characterization and zonation table, use the mangrove characterization and zonation add form. Enter the data into the appropriate fields (Figure 1.3.1a, Letters A-G). Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a). Note: The screenshot in Figure 1.3.1a does not show the navigational features found on the forms. Refer to Table 1.2 for information on navigational procedures through out the data entry process.

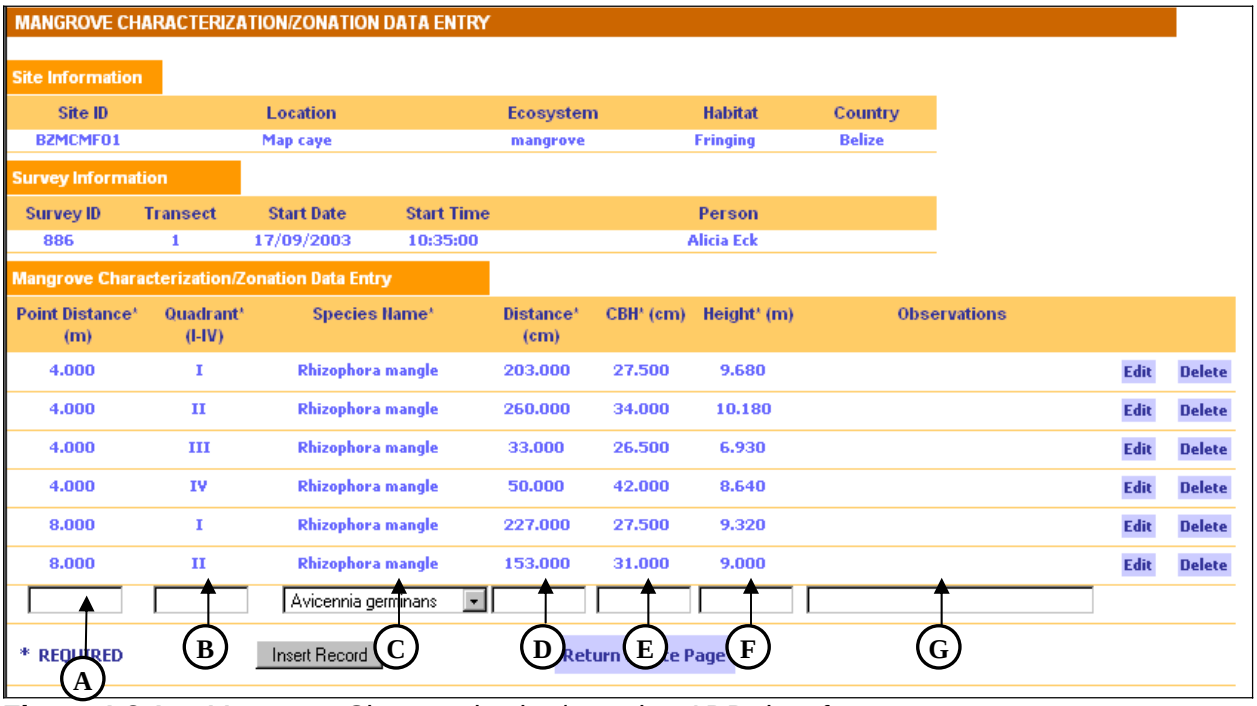


Figure 1.3.1a. Mangrove Characterization/zonation ADD data form.

Legend 1.3.1a. Characterization/Zonation ADD Data: Legend for Figure 1.3.1a

	Description
A	Enter the distance from the origin of the centerline to the point in meters.
B	Enter the number of the quadrant. Valid values are I, II, III, and IV.
C	Select the tree species name from the pull down menu.
D	Enter the distance from the center point in centimeters.
E	Enter the circumference of the tree at breast height in centimeters.
F	Enter the height of the tree in meters in meters.
G	Enter any additional observations or comments.

EDIT

To access the mangrove characterization/zonation edit form (Figure 1.3.1b, Legend 1.3.1b), select the edit button of a current record in the mangrove characterization/zonation table. Once the edited data is entered into the boxes, use the "update record" button to enter this data into the database. Note: The screenshot in Figure 1.3.1b does not show the navigational features found on the forms. Refer to Table 1 for information on navigational procedures through out the data entry process.

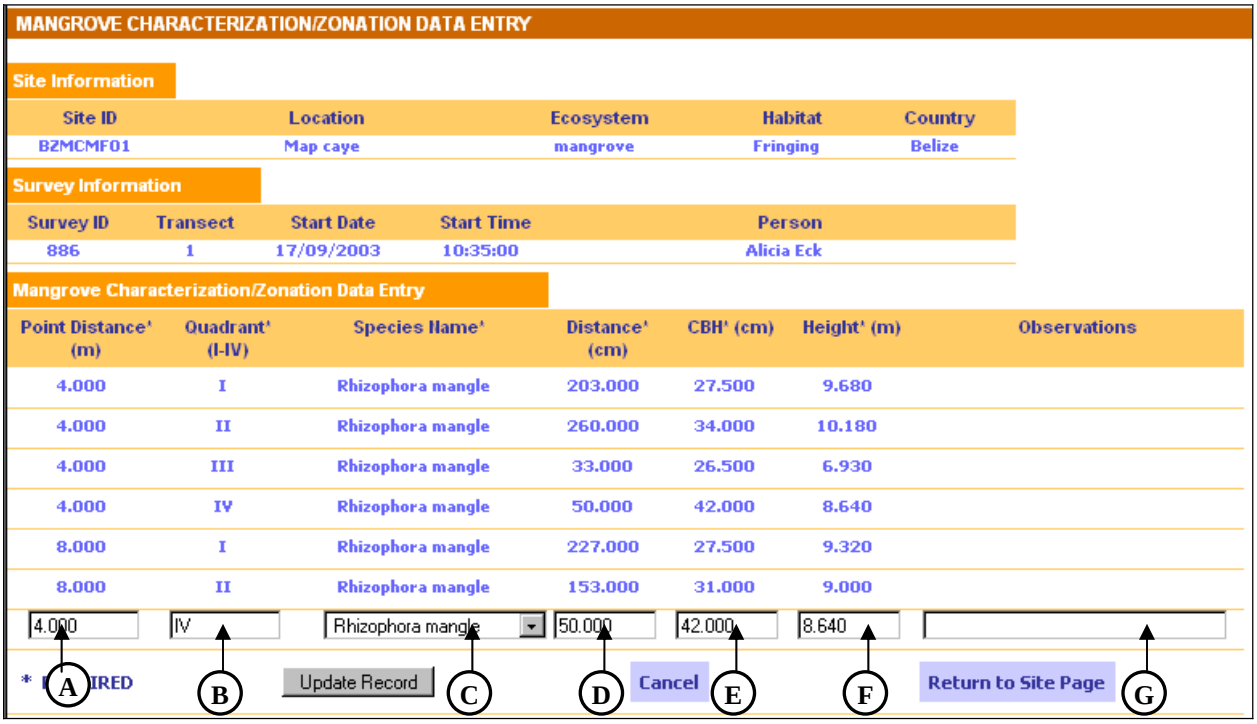


Figure 1.3.1b. Mangrove characterization/zonation EDIT data form.

Legend 1.3.1b. Characterization/Zonation EDIT Data: Legend for Figure 1.3.1b

	Description
A	Edit the point distance
B	Edit the number of the quadrant
C	Edit the species name by selecting a new species from the pull down menu.
D	Edit the distance in centimeters
E	Edit the circumference of the tree at breast height in centimeters
F	Edit the height of the tree in meters
G	Edit any additional observations or comments.

1.3.2 Forest Structure

The purpose of the mangrove forest structure forms is to enter the field collected data into the mangrove forest table. The items in the mangrove forest table (Table 1.3.2) are position x, position y, tree number, species name, CBH, prop root length, height to first branch, and tree height.

Table 1.3.2. Forest Structure Items Description.

Item Name	Required	Item Description
Position X (m)	Yes	The X location of the tree in relation to the corner of the plot.
Position Y (m)	Yes	The Y location of the tree in relation to the corner of the plot.
Tree Number	Yes	The number of the tree within the plot.
Species	Yes	A pull down menu with the names of possible tree species.
CBH (cm)		The circumference of the tree at breast height in centimeters.
Prop Root Length (cm)		The height of the prop root in centimeters.
Height to Branch (m)		The height to the first branch in meters.
Tree Height (m)		The height of the tree in meters.

ADD

To add a record to the mangrove forest structure table, use the mangrove forest structure data entry form (Figure 1.3.2a, Legend 1.3.2a). Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

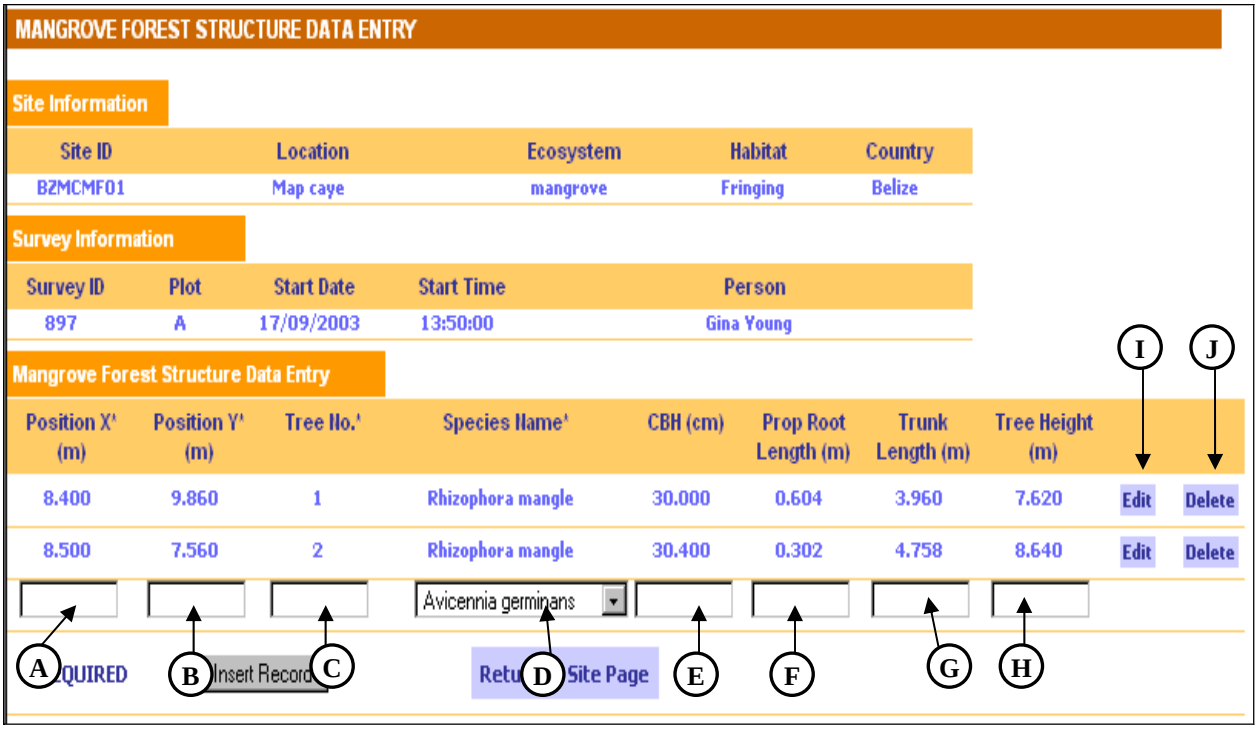


Figure 1.3.2a. Mangrove forest structure ADD data form.

Legend 1.3.2a. Forest Structure ADD Data: Legend for Figure 1.3.2a

	Description
A	Enter the X position of the tree in meters
B	Enter the Y position of the tree in meters
C	Enter the number of the tree
D	Select the name of the tree species from the pull down menu.
E	Enter the circumference of the tree at breast height
F	Enter the prop root length of the tree in centimeters
G	Enter the height to the first branch of the tree in meters
H	Enter the height of the tree in meters
I	Select the Edit button to edit the data of an existing record
J	Delete the row of data from the database. Remember all deletes are permanent.

EDIT

Use the mangrove forest structure edit form to alter the existing records in the mangrove forest structure table. Once the edits are complete, use the "update record" button to commit these edits to the database.

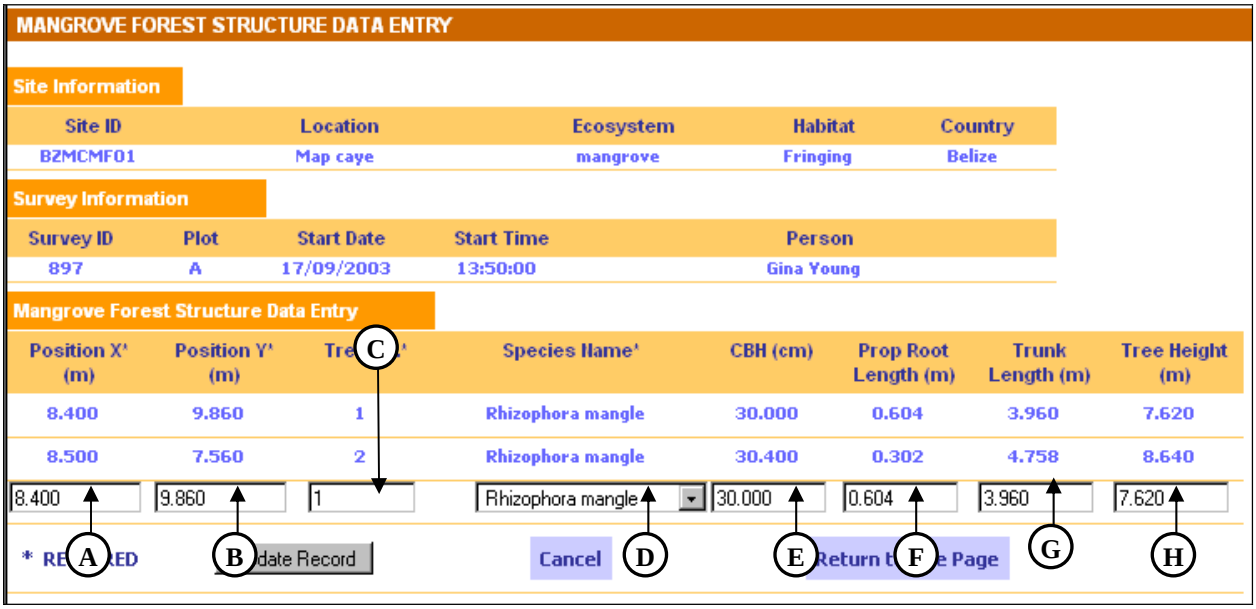


Figure 1.3.2b. Mangrove forest structure EDIT data form.

Legend 1.3.2b. Forest Structure EDIT Data: Legend for Figure 1.3.2b

	Description
A	Edit the X position of the tree
B	Edit the Y position of the tree
C	Edit the number of the tree
D	Edit the species name by selecting a new species from the pull down menu.
E	Edit the circumference of the tree at breast height
F	Edit the prop root length of the tree
G	Edit the trunk length of the tree
H	Edit the height of the tree

1.3.3 Seedling/Sapling

The purpose of the seedling/sapling data forms is to record the mangrove forest structure seedling/sapling subplots monitoring data into the seedling/sapling table (Table 1.3.3). The items in the seedling/sapling table are subplot, position X, position Y, seedling/sapling, species, CBH, height, and live.

Table 1.3.3. Seedling/Sapling Items Description.

Item Name	Required	Item Description
Subplot	Yes	The subplot ID
Position X	Yes	The X location of the seedling/sapling in relation to the corner of the subplot
Position Y	Yes	The Y location of the seedling/sapling in relation to the corner of the subplot
Seedling/Sapling	Yes	The seedling/sapling number in the plot
Species	Yes	The species name of the seedling/sapling
CBH (cm)		The circumference of the seedling/sapling at breast height
Height (cm)	Yes	The height of the seedling/sapling
Live (Y/N)	Yes	Indicate whether the seedling/sapling is alive with a Y for yes and a N for no.

ADD

To add a new record to the seedling/sapling table, use the seedling/sapling data entry form (Figure 1.3.3a, Legend 1.3.3a). Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

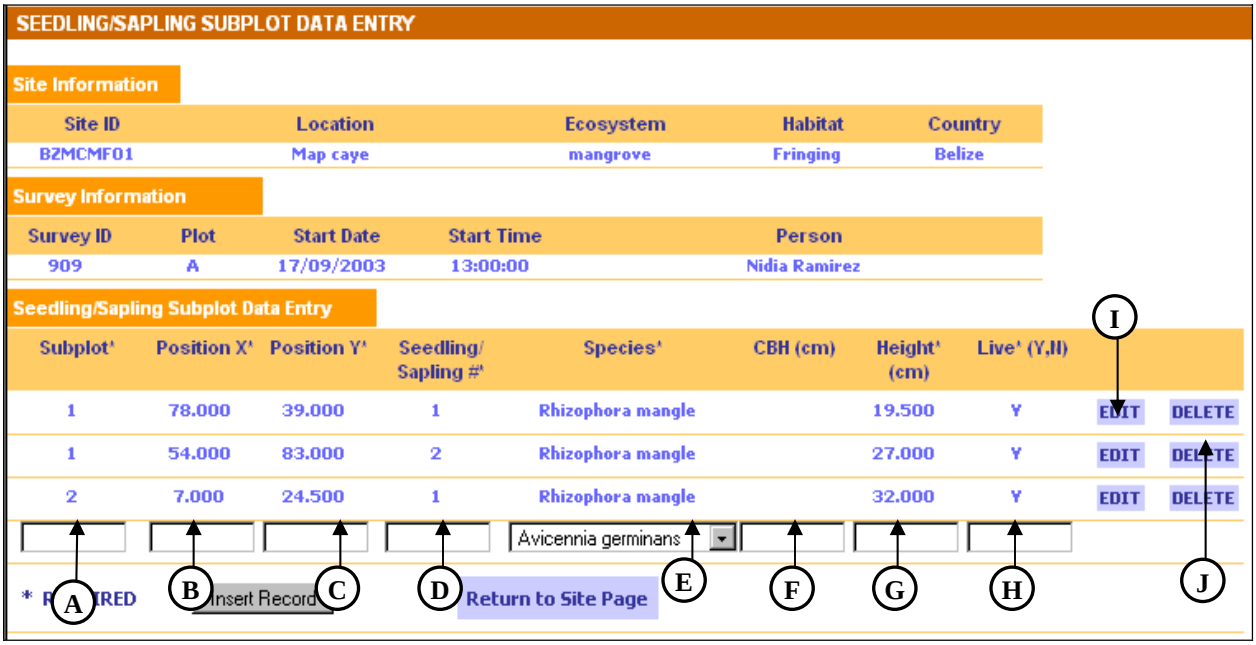


Figure 1.3.3a. Seedling/sapling subplot ADD data form.

Legend 1.3.3a. Seedling/Sapling Subplot ADD Data: Legend for Figure 1.3.3a

	Description
A	Enter the number of the subplot.
B	Enter the X position of the seedling/sapling in centimeters.
C	Enter the Y position of the seedling/sapling in centimeters.
D	Enter the seedling/sapling number.
E	Use the pull down menu to select the species name.
F	Enter the circumference at breast height of the seedling/sapling in centimeters.
G	Enter the height of the seedling/sapling in centimeters.
H	Enter a Y for yes or N for no to indicate if the seedling/sapling is alive or not..
I	Use this button to edit the records in the database.
J	Delete the row of data from the database. Remember all deletes are permanent.

EDIT

To edit a record in the seedling/sapling table, use the seedling/sapling edit form (Figure 1.3.3b, Legend 1.3.3b). To access the seedling/sapling edit form, refer to Figure 1.3.3a, Letter I). Once the edits have been completed, select the "update record" button to commit the changes to the database.

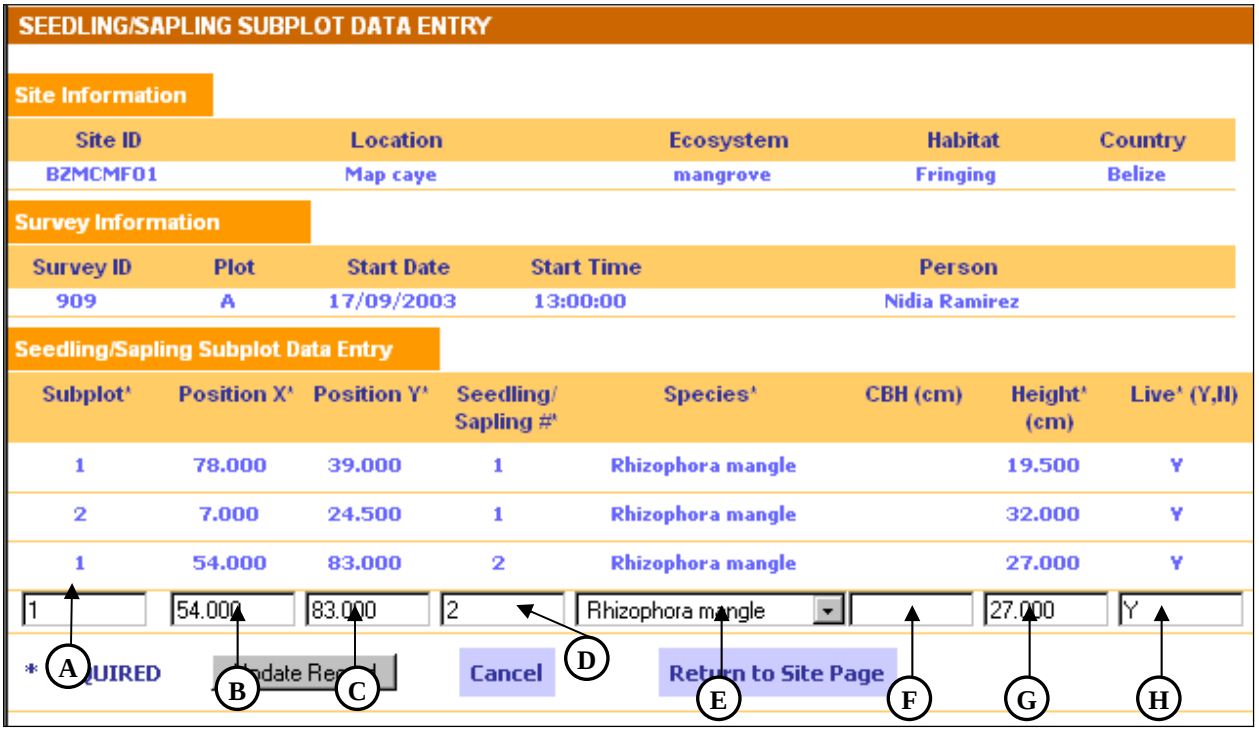


Figure 1.3.3b. Seedling/sapling subplot EDIT data form.

Legend 1.3.3b. Seedling/Sapling Subplot EDIT data: Legend for Figure 1.3.3b

	Description
A	Edit the number of the subplot
B	Edit the X position of the seedling/sapling
C	Edit the Y position of the seedling/sapling
D	Edit the seedling/sapling number
E	Edit the species name by selecting a new species from the pull down menu
F	Edit the circumference at breast height of the seedling/sapling in centimeters
G	Edit the height of the seedling/sapling in centimeters
H	Edit a Y for yes or N for no to indicate if the seedling/sapling is alive or not.

1.3.4 Seedling/Sapling biomass

The purpose of the seedling/sapling biomass data forms is to record the seedling/sapling biomass monitoring data into the seedling/sapling biomass table (Table 1.3.4). The items in the seedling/sapling biomass table are species name, seedling/sapling, height, tare weight, and total weight.

Table 1.3.4. Seedlings/Saplings Biomass Items Description.

Item Name	Required	Item Description
Species Name	Yes	The species name of the seedling/sapling
Seedling /Sapling		Indicate whether it is a seedling or sapling being measured.
Height (cm)	Yes	The height of the seedling/sapling
Tare Weight (g)	Yes	The tare weight in grams
Total Weight (g)	Yes	The total weight in grams

ADD

To add a new record to the seedling/sapling biomass table, use the seedling/sapling biomass data entry form (Figure 1.3.4a, Legend 1.3.4a). Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

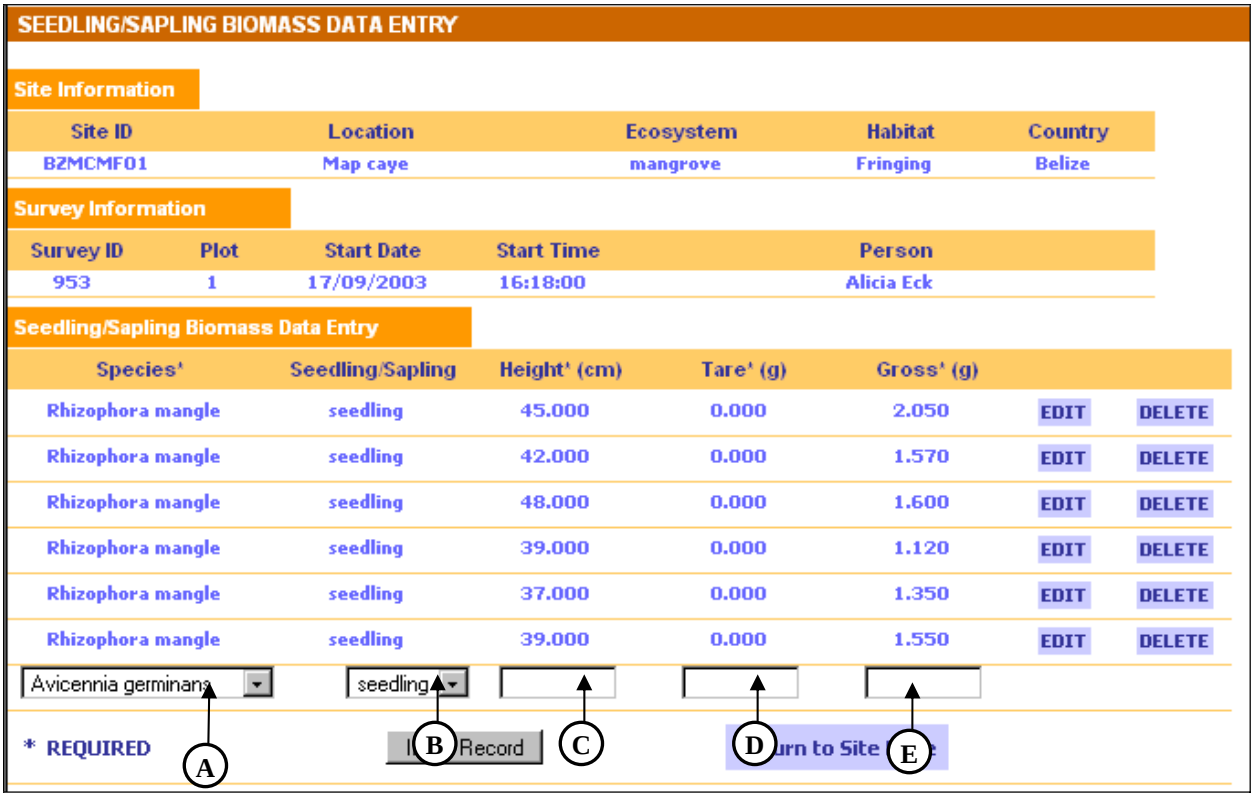


Figure 1.3.4a. Seedling/sapling biomass ADD data form.

Legend 1.3.4a. Seedlings/Saplings Biomass ADD Data: Legend for Figure 1.3.4a

	Description
A	Use the pull down menu to select the species name.
B	Enter either "seedling" or "sapling".
C	Enter the height of the seedling/sapling in centimeters.
D	Enter the tare weight of the seedling/sapling in grams.
E	Enter the total weight of the seedling/sapling in grams.

EDIT

To edit a record in the seedling/sapling biomass table, use the seedling/sapling biomass edit form (Figure 1.3.4b, Legend 1.3.4b). To access the seedling/sapling biomass edit form, refer to Figure 1.3.3a, Letter I). Once the edits have been completed, select the "update record" button to commit the changes to the database.

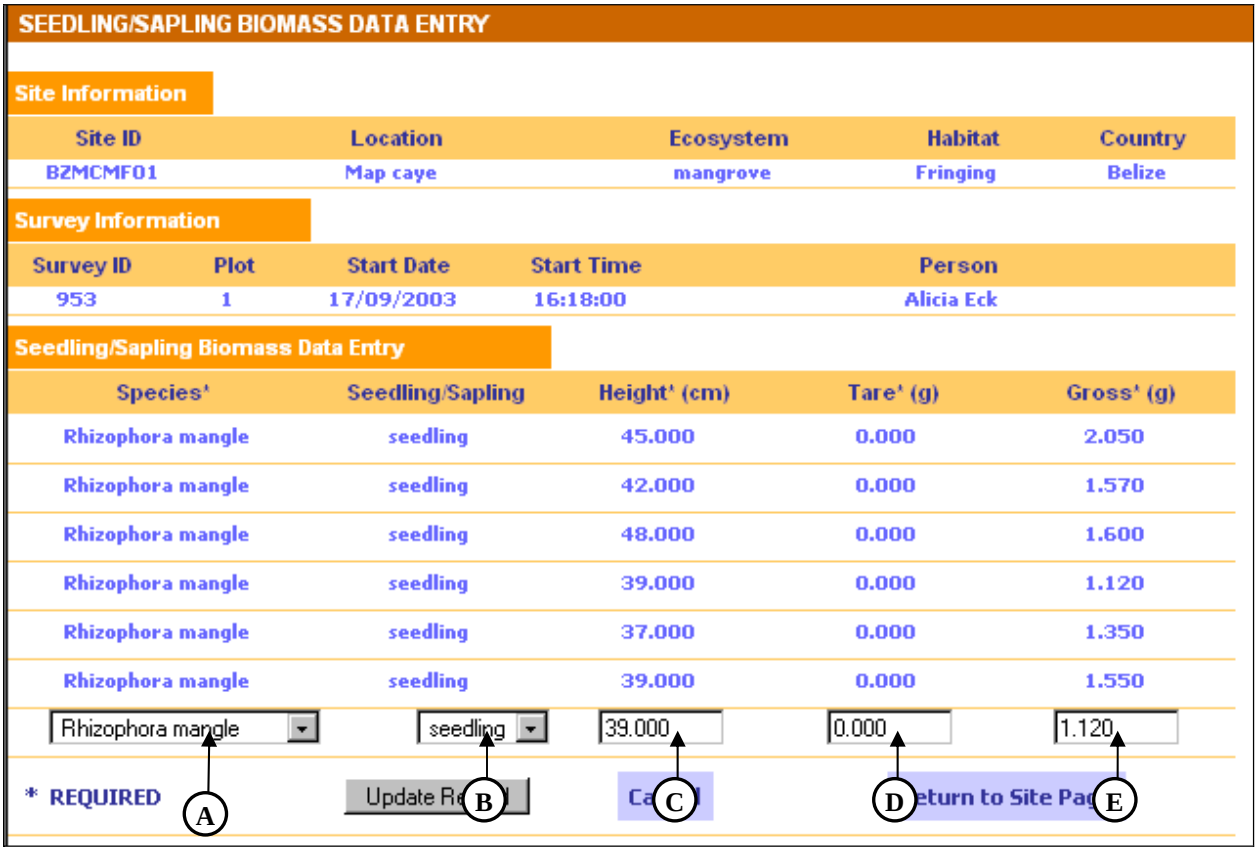


Figure 1.3.4b. Seedling/sapling biomass EDIT data forms.

Legend 1.3.4b. Seedlings/Sapling Biomass EDIT Data: Legend for Figure 1.3.4b

	Description
A	Edit the species name by selecting a new species from the pull down menu.
B	Edit the seedling/sapling.
C	Edit the height of the seedling/sapling in centimeters.
D	Edit the tare weight of the seedling/sapling in grams.
E	Edit the total weight of the seedling/sapling in grams.

1.3.5 Leaf Litter

The purpose of the mangrove leaf litter data entry forms is to transfer the field collected (on paper) data into the web-based forms by recording the leaf litter data into the leaf litter table (Table 1.3.5). The items in the leaf litter table are trap number, species, leaf tare, leaf gross, bract tare, bract gross, flower tare, flower gross, fruit tare, fruit gross, wood tare, wood gross, miscellaneous tare, and miscellaneous gross.

Table 1.3.5. Leaf Litter Items Description.

Item Name	Required	Item Description
Trap Number	Yes	The ID of the trap used to collect the leaf litter
Species		The name of the tree species
Leaf Tare		The tare weight of the leaves
Leaf Gross		The gross weight of the leaves
Bract Tare		The tare weight for bract
Bract Gross		The gross weight for bract
Flower Tare		The tare weight for flowers
Flower Gross		The gross weight for flowers
Fruit Tare		The tare weight for fruit
Fruit Gross		The gross weight for fruit
Wood Tare		The tare weight for wood
Wood Gross		The gross weight for wood
Misc Tare		The tare weight for miscellaneous material
Misc Gross		The gross weight for miscellaneous material

ADD

Use the leaf litter data entry form (Figure 1.3.5a, Legend 1.3.5a) to add records into the leaf litter table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

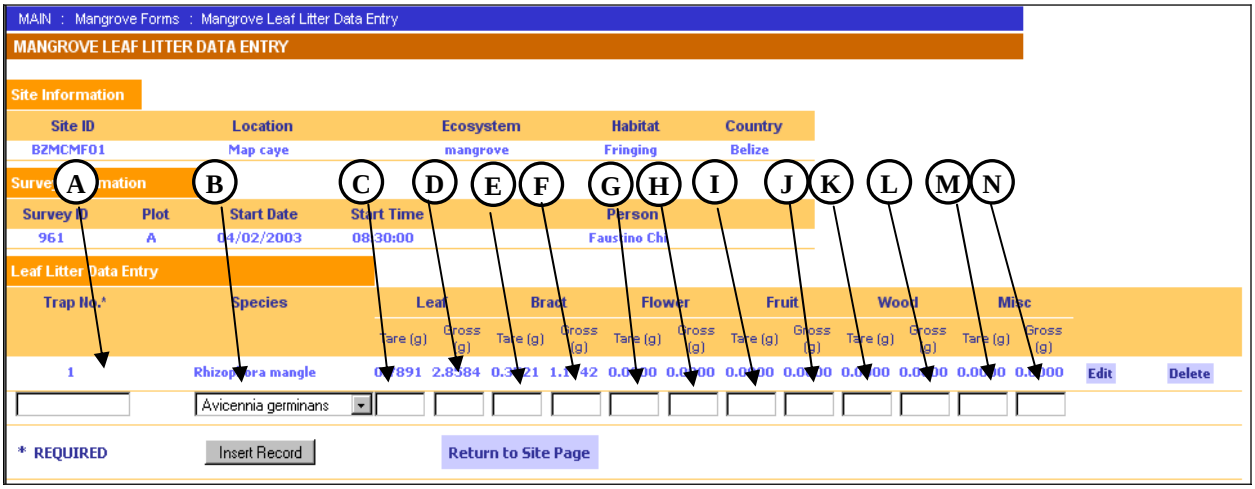


Figure 1.3.5a. Leaf litter ADD data form.

Legend 1.3.5a. Leaf Litter ADD Data: Legend for Figure 1.3.5a.

	Description
A	Enter the number of the trap
B	Select the tree species name from the pull down menu
C	Enter the tare weight of the leaves in grams. If recorded weight is already adjusted for the tare enter 0.
D	Enter the gross weight of the leaves in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.
E	Enter the tare weight of the bract in grams. If recorded weight is already adjusted for the tare enter 0.
F	Enter the gross weight of the bract in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.
G	Enter the tare weight of the flower in grams. If recorded weight is already adjusted for the tare enter 0.
H	Enter the gross weight of the flower in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.
I	Enter the tare weight of the fruit in grams. If recorded weight is already adjusted for the tare enter 0.
J	Enter the gross weight of the fruit in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.
K	Enter the tare weight of the wood in grams. If recorded weight is already adjusted for the tare enter 0.
L	Enter the gross weight of the wood in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.
M	Enter the tare weight of the miscellaneous material in grams. If recorded weight is already adjusted for the tare enter 0.
N	Enter the gross weight of the miscellaneous material in grams. If the recorded weight is already adjusted for the tare, enter the recorded weight.

EDIT

The edit leaf litter form (Figure 1.3.5a, Legend 1.3.5a) enables the user to change, alter, or update the previously entered records. After editing a record, the "update record" button must be used to commit the record changes to the database.

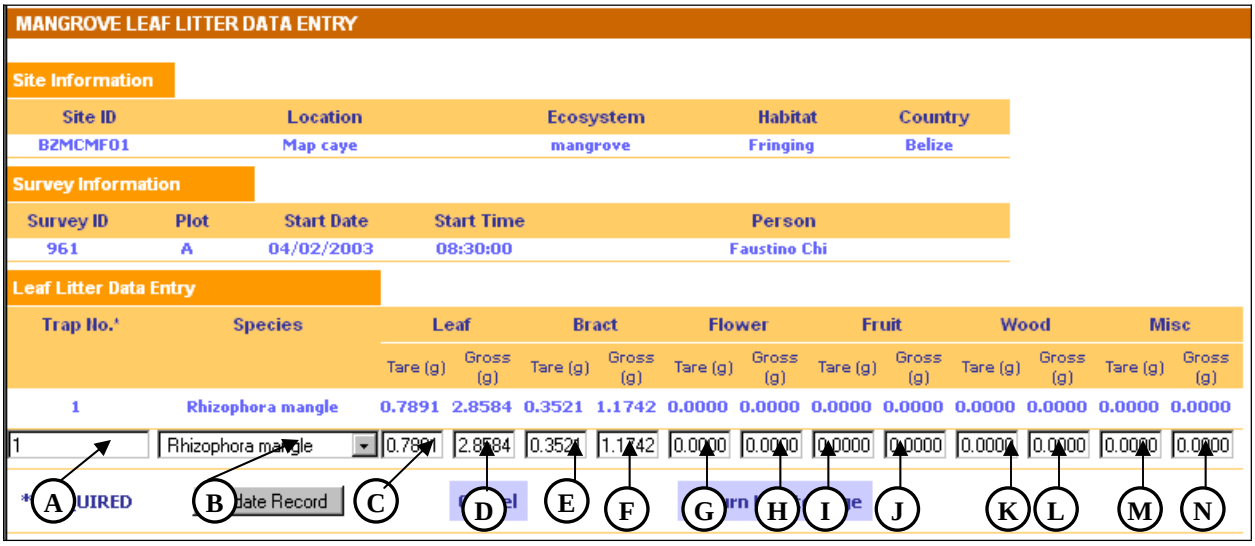


Figure 1.3.5b. Leaf litter EDIT data form.

Legend 1.3.5b. Leaf Litter EDIT Data: Legend for Figure 1.3.5b

	Description
A	Edit the number of the trap
B	Edit the species name by selecting a new species from the pull down menu
C	Edit the tare weight of the leaves in grams
D	Edit the gross weight of the leaves in grams
E	Edit the tare weight of the bract in grams
F	Edit the gross weight of the bract in grams
G	Edit the tare weight of the flower in grams
H	Edit the gross weight of the flower in grams
I	Edit the tare weight of the fruit in grams
J	Edit the gross weight of the fruit in grams
K	Edit the tare weight of the wood in grams
L	Edit the gross weight of the wood in grams
M	Edit the tare weight of the miscellaneous material in grams
N	Edit the gross weight of the miscellaneous material in grams

1.3.6 Interstitial water

The purpose of the interstitial water data forms is to record the interstitial water monitoring data into the interstitial water table (Table 1.3.6). The items in the interstitial water table are depth, sediment surface exposure, and salinity.

Table 1.3.6. Interstitial Water Items Description.

Item Name	Required	Item Description
Depth (cm)	Yes	The depth in centimeters at which the sample was collected
Sediment Surface Exposed (Y/N)	Yes	Identifies whether the sediment surface was exposed (above the water level) at the time of the sample was collected.
Salinity (ppt)	Yes	The salinity of the water in parts per thousand.

ADD

To add a new record to the interstitial water table, use the interstitial water data entry form (Figure 1.3.6a, Legend 1.3.6a). Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

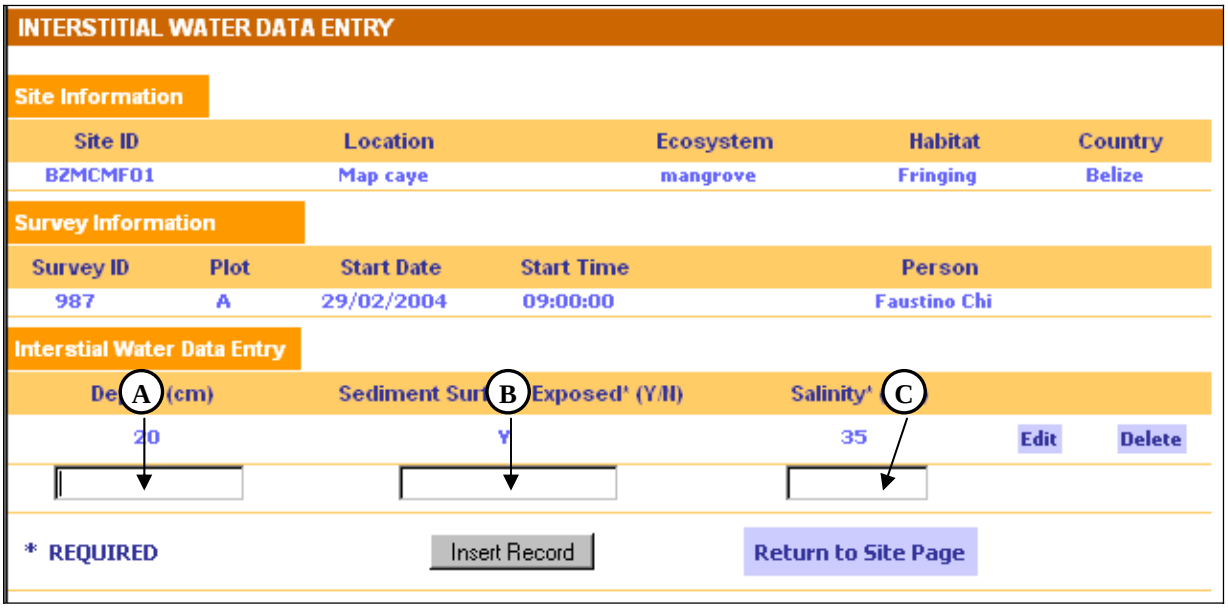


Figure 1.3.6a. Interstitial water ADD data form.

Legend 1.3.6a. Interstital Water ADD Data: Legend for Figure 1.3.6a.

	Description
A	Enter the depth at which the sample was collected in centimeters
B	Enter a Y for yes or a N for no indicating that the sediment surface was exposed at the time the sample was collected
C	Enter the salinity of the water in parts per thousand.

EDIT

To edit a record in the interstitial water table, use the interstitial water edit form (Figure 1.3.6b, Legend 1.3.6b). To access the interstitial water edit form, refer to Figure 1.3.3a, Letter I. Once the edits have been completed, select the "update record" button to commit the changes to the database

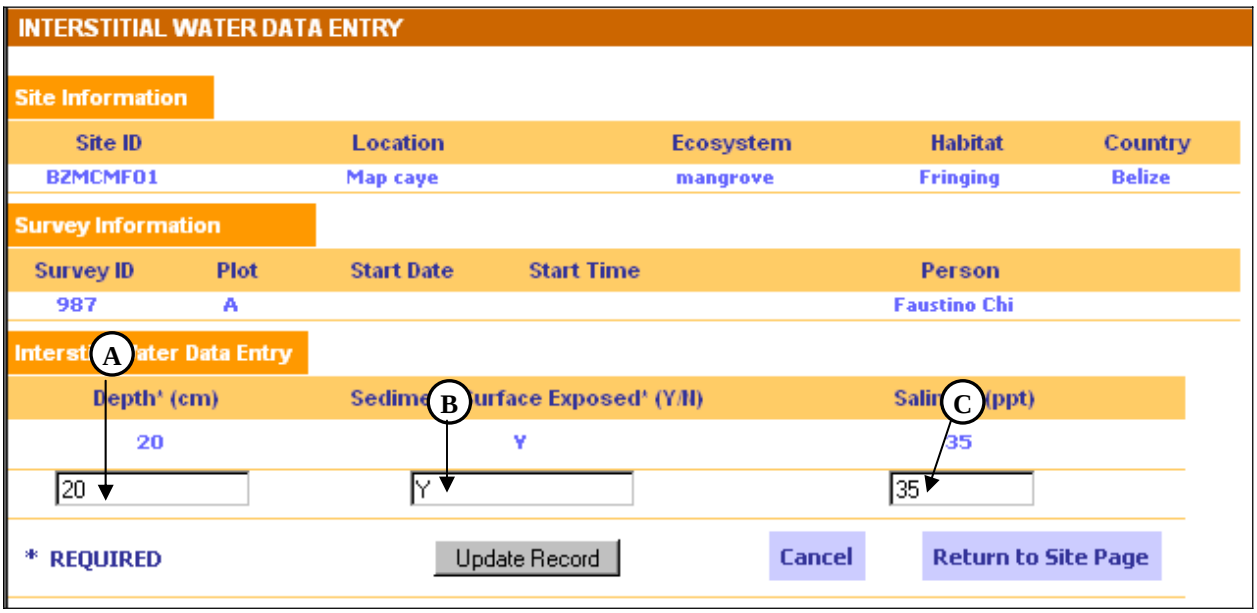


Figure 1.3.6b. Interstitial water EDIT data form.

Legend 1.3.6b. Interstitial Water EDIT Data: Legend for Figure 1.3.6b.

	Description
A	Edit the depth at which the sample was collected in centimeters
B	Edit a Y for yes or a N for no that the sediment surface was exposed at the time the sample was collected
C	Edit the salinity of the water in parts per thousand.

1.4 Seagrass forms

The mangrove and seagrass forms menu (Figure 1.1.1) lists both the mangrove and seagrass forms available for data entry. Refer to section 1.3 for the specifics on the mangrove forms. Continuing from Section 1.1.1, the three seagrass data entry forms available are seagrass growth, seagrass biomass, and seagrass leaf area index. To access the data entry form for any of the seagrass data entry forms, the user must select the either the NEW SURVEY or EXISTING SURVEY button. Then follow the steps outlined in section 1.2.

1.4.1 Seagrass growth

The purpose of the seagrass growth data forms is to record the seagrass growth data into the seagrass growth table (Table 1.4.1). The items in the seagrass growth table are quadrat, new growth tare, new growth gross, old growth tare, old growth gross, standing crop tare, and standing crop gross.

Table 1.4.1. Seagrass Growth Items Description.

Item Name	Required	Item Description
Quadrat	Yes	The number quadrat where the monitoring occurred
New Growth Tare (g)		The tare weight for new leaves in grams
New Growth Gross (g)		The gross weight for new leaves in grams
Old Growth Tare (g)		The tare weight for new growth on old leaves in grams.
Old Growth Gross (g)		The gross weight for new growth on old leaves in grams.
Standing Crop Tare (g)		The tare weight for old standing crop in grams
Standing Crop Gross (g)		The gross weight for old standing crop in grams.

ADD

Use the seagrass growth data entry form (Figure 1.4.1, Legend 1.4.1) to add records into the seagrass growth table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

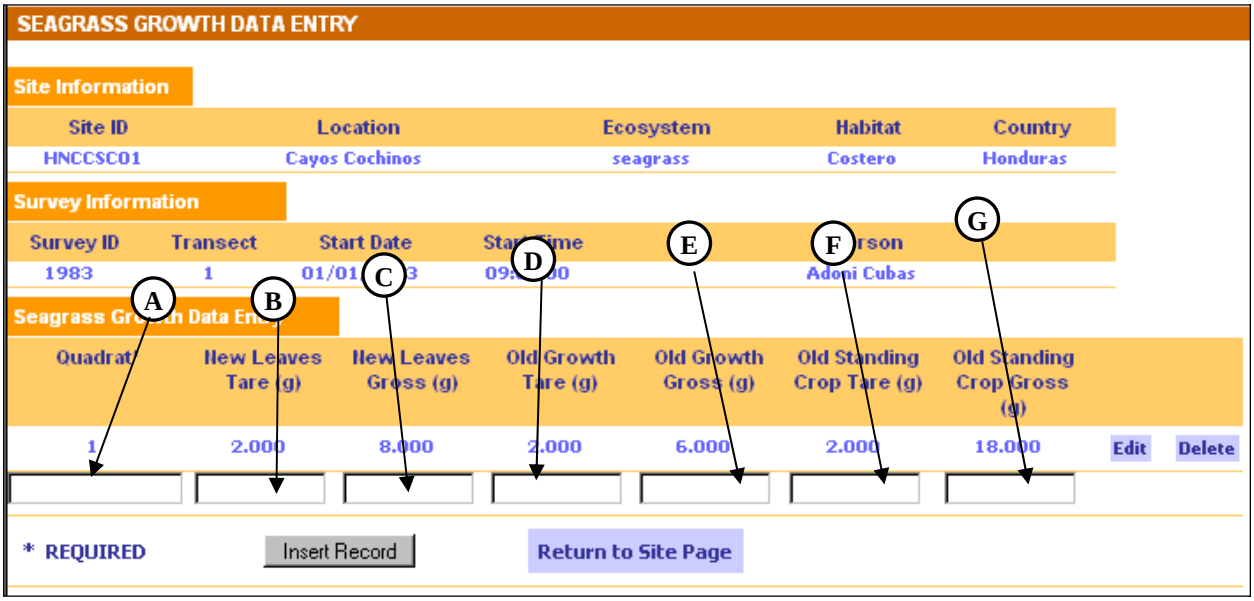


Figure 1.4.1a. Seagrass growth ADD data form.

Legend 1.4.1a. Seagrass Growth ADD Data: Legend for Figure 1.4.1a

	Description
A	Enter the number of the quadrat (1-6).
B	Enter the new growth tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
C	Enter the new growth gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
D	Enter the old growth tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
E	Enter the old growth gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
F	Enter the standing crop tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
G	Enter the standing crop gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.

EDIT

The edit seagrass growth form (Figure 1.4.1b, Legend 1.4.1b) enables the user to change, alter, or update the previously entered records. After editing a record, the "update record" button must be used to commit the record changes to the database.

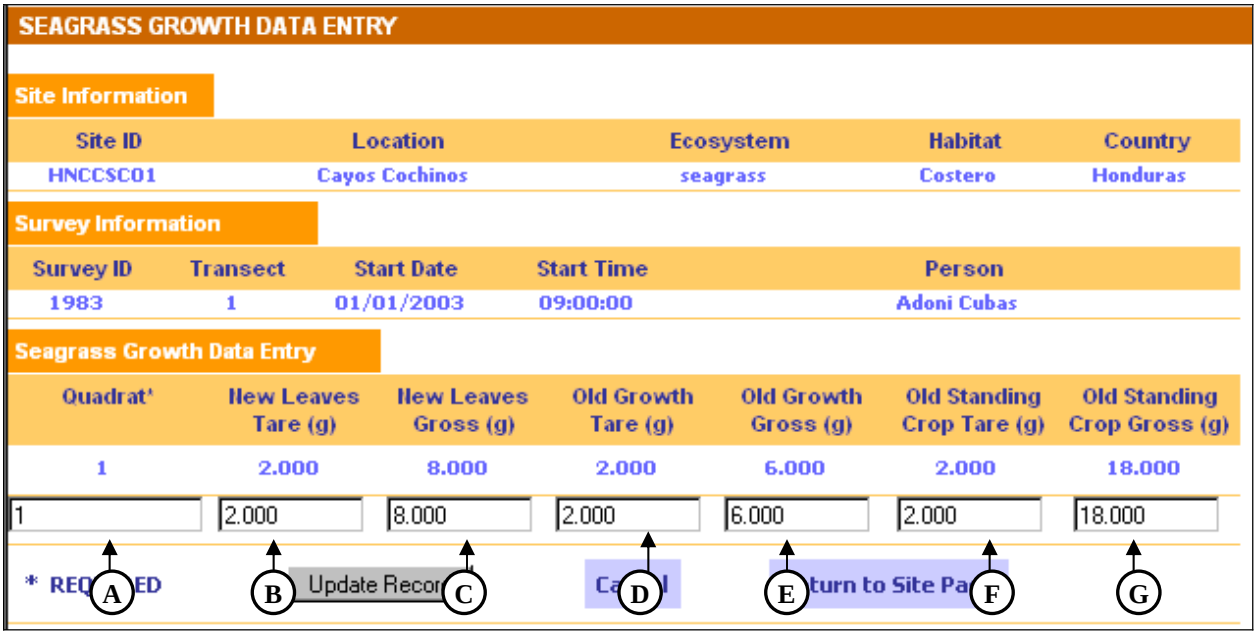


Figure 1.4.1b Seagrass growth EDIT data form.

Legend 1.4.1b. Seagrass Growth EDIT Data: Legend for Figure 1.4.1b.

	Description
A	Edit the number of the quadrat.
B	Edit the new growth tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
C	Edit the new growth gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
D	Edit the old growth tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
E	Edit the old growth gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
F	Edit the standing crop tare weight. If the recorded weight has already been adjusted for the tare, enter 0.
G	Edit the standing crop gross weight. If the recorded weight has already been adjusted for the tare, enter the recorded weight.

1.4.2 Seagrass Biomass

The purpose of the seagrass biomass data forms is to record the seagrass biomass data into the seagrass biomass table (Table 1.4.2). The items in the seagrass biomass table are core replicate, core diameter, core depth, living shoots, Thalassia green leaves tare weight, Thalassia green leaves gross weight, Thalassia short shoots tare weight, Thalassia short shoots gross weight, Thalassia rhizomes tare weight, Thalassia rhizomes gross weight, Thalassia roots tare weight, Thalassia roots gross weight, Thalassia dead tissue tare weight, Thalassia dead tissue gross weight, other grasses green tissue tare weight, other grasses green tissue gross weight, other grasses nongreen tissue tare weight, Other nongrasses green tissue gross weight, fleshy algae tare weight, fleshy algae gross weight, calcareous algae above ground tare weight, calcareous algae above ground gross weight, calcareous algae below ground tare weight, calcareous algae below ground gross weight.

Table 1.4.2. Seagrass Biomass Items Description.

Item Name	Required	Item Description
Core Replicate	Yes	The core replicate number
Core Diameter (cm)	Yes	The diameter of the core in centimeters
Core Depth (cm)		The depth of the core in centimeters
Living Shoots		The number of living shoots in a core
Thalassia Green Leaves Tare Wt.		The tare weight for the green leaves in grams.
Thalassia Green Leaves Gross Wt.		The gross weight for the green leaves in grams. From the tare and gross the net weight can be calculated.
Thalassia Short Shoots Tare Wt.		The tare weight for the short shoots in grams.
Thalassia Short Shoots Gross Wt.		The gross weight for the short shoots in grams. From the tare and gross the net weight can be calculated.
Thalassia Rhizomes Tare Wt.		The tare weight for the rhizomes in grams.
Thalassia Rhizomes Gross Wt.		The gross weight for the rhizomes in grams. From the tare and gross the net weight can be calculated.
Thalassia Roots Tare Wt.		The tare weight for the roots in grams.
Thalassia Roots Gross Wt.		The gross weight for the roots in grams. From the tare and gross the net weight can be calculated.
Thalassia Dead Tissue Tare Wt.		The tare weight for the dead tissue in grams.
Thalassia Dead Tissue Gross Wt.		The gross weight for the dead tissue in grams. From the tare and gross the net weight can be calculated.
Other Grass Green Tissue Tare Wt.		The tare weight for green tissue from other grasses in grams.
Other Grass Green Tissue Gross Wt.		The gross weight for the green tissue from other grasses in grams. From the tare and gross the net weight can be calculated.

Other Grass Nongreen Tissue Tare Wt.		The tare weight for the nongreen tissue from other grasses in grams.
Other Grass Nongreen Tissue Gross Wt.		The gross weight for the nongreen tissue from other grasses in grams. From the tare and gross the net weight can be calculated.
Fleshy Algae Tare Wt.		The tare weight for fleshy algae in grams.
Fleshy Algae Gross Wt.		The gross weight for the fleshy algae in grams. From the tare and gross the net weight can be calculated.
Calcareous Algae Above Ground Tare Wt.		The tare weight for above ground calcareous algae in grams.
Calcareous Algae Above Ground Gross Wt.		The gross weight for the above ground calcareous algae in grams. From the tare and gross the net weight can be calculated.
Calcareous Algae Below Ground Tare Wt.		The tare weight for the below ground calcareous algae in grams.
Calcareous Algae Below Ground Gross Wt.		The gross weight for the below ground calcareous algae in grams. From the tare and gross the net weight can be calculated.

ADD

Use the seagrass biomass data entry form (Figure 1.4.2a, Legend 1.4.2a) to add records into the seagrass biomass table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

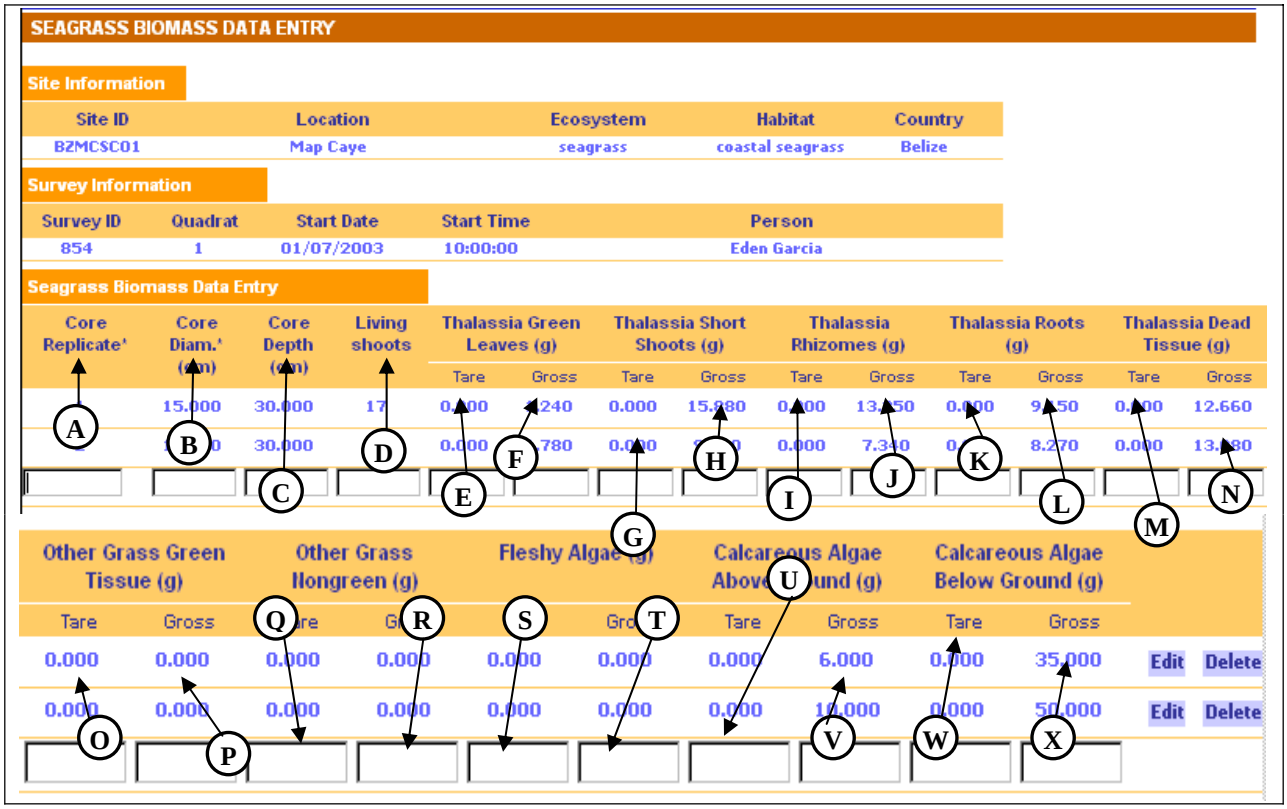


Figure 1.4.2a. Seagrass biomass ADD data form.

Legend 1.4.2a. Seagrass Biomass ADD Data: Legend for Figure 1.4.2a

	Description
A	Enter the core replicate number.
B	Enter the diameter of the core.
C	Enter the depth of the core.
D	Enter the number of living shoots identified in the core.
E	Enter the tare weight for the green leaves in grams. If the recorded weight has already been adjusted for the tare, enter 0.
F	Enter the gross weight for the green leaves in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
G	Enter the tare weight for the short shoots in grams. If the recorded weight has already been adjusted for the tare, enter 0.
H	Enter the gross weight for the short shoots in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.

I	Enter the tare weight for the rhizomes in grams. If the recorded weight has already been adjusted for the tare, enter 0.
J	Enter the gross weight for the rhizomes in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
K	Enter the tare weight for the roots in grams. If the recorded weight has already been adjusted for the tare, enter 0.
L	Enter the gross weight for the roots in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
M	Enter the tare weight for the dead tissue in grams. If the recorded weight has already been adjusted for the tare, enter 0.
N	Enter the gross weight for the dead tissue in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
O	Enter the tare weight for green tissue from other grasses in grams. If the recorded weight has already been adjusted for the tare, enter 0.
P	Enter the gross weight for the green tissue from other grasses in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
Q	Enter the tare weight for the nongreen tissue from other grasses in grams. If the recorded weight has already been adjusted for the tare, enter 0.
R	Enter the gross weight for the nongreen tissue from other grasses in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
S	Enter the tare weight for fleshy algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
T	Enter the gross weight for the fleshy algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
U	Enter the tare weight for above ground calcareous algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
V	Enter the gross weight for the above ground calcareous algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
W	Enter the tare weight for the below ground calcareous algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
X	Enter the gross weight for the below ground calcareous algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.

EDIT

The edit seagrass biomass form (Figure 1.4.2b, Legend 1.4.2b) enables the user to change, alter, or update the previously entered records. After editing a record, the "update record" button must be used to commit the record changes to the database.

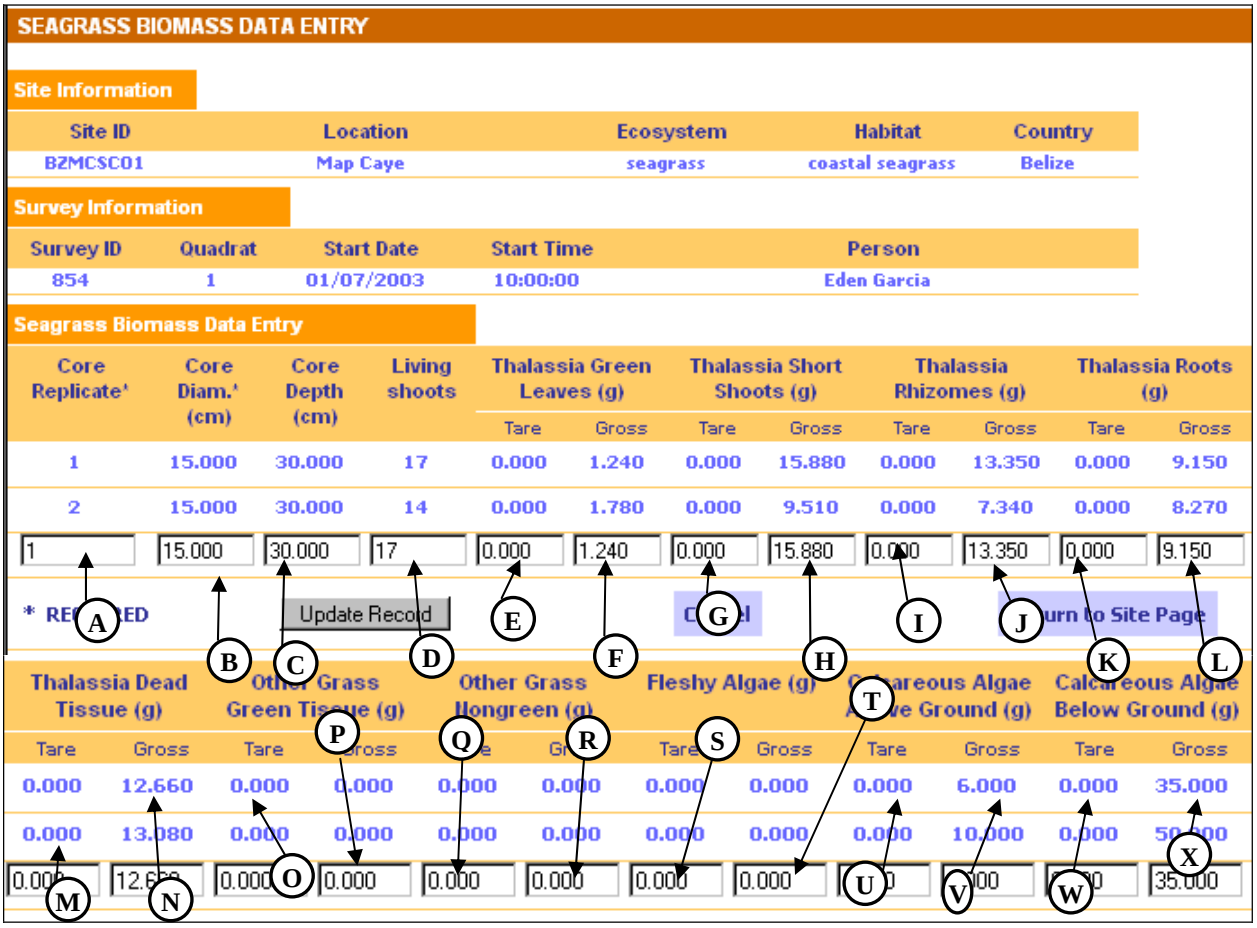


Figure 1.4.2b. Seagrass biomass EDIT data form.

Legend 1.4.2b Seagrass Biomass EDIT Data: Legend for Figure 1.4.2b.

	Description
A	Edit the core replicate number
B	Edit the diameter of the core
C	Edit the depth of the core
D	Edit the number of living shoots identified in the core
E	Edit the tare weight for the green leaves in grams. If the recorded weight has already been adjusted for the tare, enter 0.
F	Edit the gross weight for the green leaves in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
G	Edit the tare weight for the short shoots in grams. If the recorded weight has already been adjusted for the tare, enter 0.
H	Edit the gross weight for the short shoots in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the

	tare, enter the recorded weight.
I	Edit the tare weight for the rhizomes in grams. If the recorded weight has already been adjusted for the tare, enter 0.
J	Edit the gross weight for the rhizomes in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
K	Edit the tare weight for the roots in grams. If the recorded weight has already been adjusted for the tare, enter 0.
L	Edit the gross weight for the roots in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
M	Edit the tare weight for the dead tissue in grams. If the recorded weight has already been adjusted for the tare, enter 0.
N	Edit the gross weight for the dead tissue in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
O	Edit the tare weight for green tissue from other grasses in grams. If the recorded weight has already been adjusted for the tare, enter 0.
P	Edit the gross weight for the green tissue from other grasses in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
Q	Edit the tare weight for the nongreen tissue from other grasses in grams. If the recorded weight has already been adjusted for the tare, enter 0.
R	Edit the gross weight for the nongreen tissue from other grasses in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
S	Edit the tare weight for fleshy algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
T	Edit the gross weight for the fleshy algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
U	Edit the tare weight for above ground calcareous algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
V	Edit the gross weight for the above ground calcareous algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.
W	Edit the tare weight for the below ground calcareous algae in grams. If the recorded weight has already been adjusted for the tare, enter 0.
X	Edit the gross weight for the below ground calcareous algae in grams. From the tare and gross the net weight can be calculated. If the recorded weight has already been adjusted for the tare, enter the recorded weight.

1.4.3 Seagrass Leaf Area Index

The purpose of the seagrass leaf area index data forms is to record the seagrass leaf area index data into the seagrass growth table (Table 1.4.3a). The items in the seagrass leaf area index table are shoot, leaf, round tip, length to epis, leaf length, leaf width.

Table 1.4.3. Seagrass Leaf Area Index Items Description.

Item Name	Required	Item Description
Shoot Number	Yes	The number of the shoot that is being measured.
Leaf Number	Yes	The number of the leaf on the associated shoot that is being measured.
Round Tip		Indicates whether the tip of the leaf is rounded.
Epis		The length in centimeters from the base of the leaf to the first occurrence of epiphytes.
Leaf Length		The length of the leaf in centimeters.
Leaf Width		The width of the leaf in centimeters.

ADD

Use the seagrass leaf area index data entry form (Figure 1.4.3a, Legend 1.4.3a) to add records into the leaf litter table. Once the correct data is entered into the boxes, use the "insert record" button to enter this data into the database. Unless the "insert record" button is used, the data will not be entered into the database. When the user has finished inputting records into the table, select the RETURN TO SITE PAGE button to return to the list of surveys (Figure 1.2.3a).

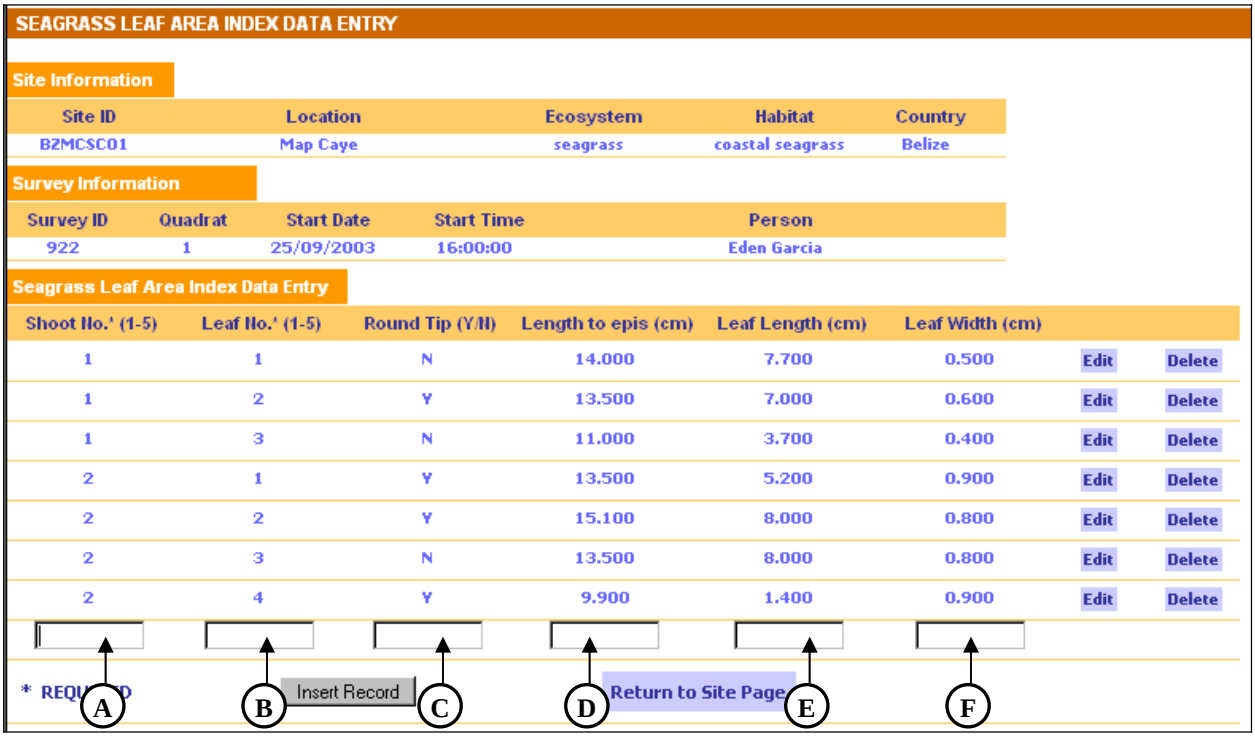


Figure 1.4.3a Seagrass leaf area index ADD data form.

Legend 1.4.3a. Seagrass Leaf Area ADD Data: Legend for Figure 1.4.3a

	Description
A	Enter the shoot number (1-5). Duplicate shoot numbers are not allowed within a quadrat.
B	Enter the leaf number (1-5). Duplicate leaf numbers are not allowed on a shoot.
C	Enter yes or no for round tip.
D	Enter the length to the epiphytes in centimeters. If epiphytes cover the entire leaf all the way down to the base this value would be 0. If there are no epiphytes this value would be the same as the leaf length.
E	Enter the length of the leaf in centimeters.
F	Enter the width of the leaf in centimeters.

EDIT

The edit seagrass leaf area index form (Figure 1.4.3b, Legend 1.4.3b) enables the user to change, alter, or update the previously entered records. After editing a record, the "update record" button must be used to commit the record changes to the database.

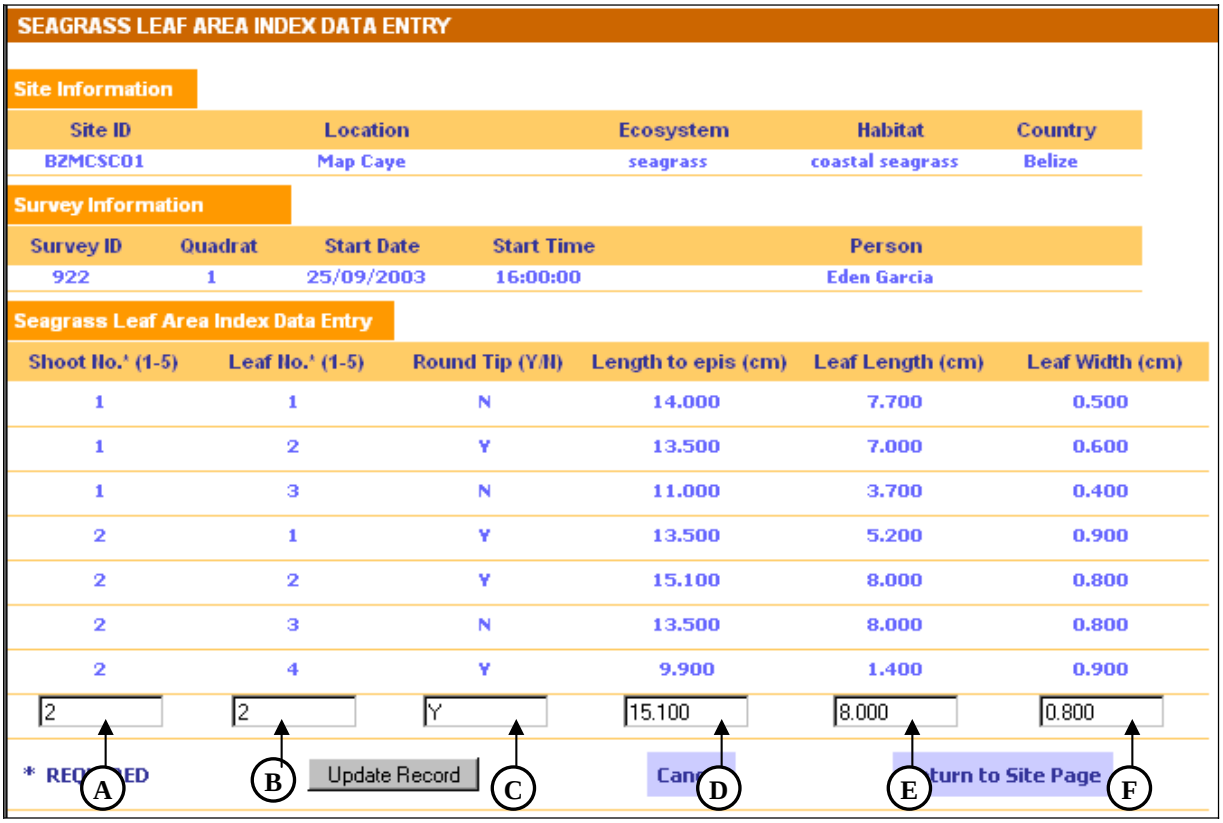


Figure 1.4.3b Leaf area index EDITdata form

Legend 1.4.3b Leaf Area Index EDIT Data: Legend for Figure 1.4.3b

	Description
A	Edit the shoot number (1-5).
B	Edit the leaf number (1-5).
C	Edit yes or no for round tip.
D	Edit the length to the epiphytes in centimeters.
E	Edit the length of the leaf in centimeters.
F	Edit the width of the leaf in centimeters.

2 REPORTS

This chapter is designed to provide the user with the step-by-step instructions necessary to view and print the information in the data grouping tables in a report format. To enhance this user guide, the explanation for each report includes, where applicable, an introduction, objective, structure, item descriptions, legend, screenshots, and any other information deemed useful to the user. For each report, several navigational elements remain the same as those in the forms. Those elements are shown in Figure 1.1 and described in Legend 1.1. The items identified in Figure 1.1 will not be identified on any pages in this chapter.

> Note: The screenshots used in this chapter, were created from a temporary database and the data shown in the screenshots should not be considered applicable to the MBRS project. There may be differences between the actual online reports and the screenshots in this manual.

2.1 Menu pages

Once the user has successfully logged onto the MBRS system, the user is taken to the main menu page. A sample menu page is shown in Figure 2.1 with navigation explained in Legend 2.1. There are seven main data groupings found within this reef system database. These data groupings are coral reef ecology, mangroves and seagrasses, marine pollution, oceanography, marine protected areas, spawning aggregations, and administration. This chapter discusses the output reports for the Mangroves and Seagrasses data groupings. From this menu page, the user can access the data entry forms (Chapter 1) and reports (Chapter 2). Refer to chapter 1 for details on the input forms.

To access the output reports for any of the data groupings, select the "queries/reports" button associated with that data grouping. For example, to access the reports for 'Mangroves and Seagrasses', select the "reports" button directly to the right (Figure 2.1, legend 2.1, label A). Selecting this button takes the user to the mangroves and seagrass report menu (See section 2.1.1).

Figure 2.1. Report Menu

Legend 2.1 Legend for Figure 2.1

	Description
A	The buttons in this column connect the user to menu of reports for the data set listed.

2.1.1 Mangrove and seagrass reports

The mangrove and seagrass report menu (Figure 2.1.1. Legend 2.1.1) identifies the reports that are available to view or query. The mangrove categories are mangrove characterization and zonation, forest structure, forest structure of seedlings and saplings, seedlings and sapling biomass, and leaf litter data. For the discussion of mangrove reports refer to Section 2.3. The seagrass categories are seagrass biomass, seagrass growth, and Thalassia leaf area index. Refer to section 2.4 for the discussion of seagrass reports.

Figure 2.1.1 Mangrove and seagrass report menu

Legend 2.1.1 Legend for Figure 2.1.1

	Description
A	The buttons in this column allow the user to construct a query on the detailed data for the data set listed
B	This buttons in this column connect the user to predefined summary reports on the dataset listed.

2.2 Query page

For each data grouping, the format and structure of the query page will be the same. The first task will be to select a field to query (Figure 2.2, Letter A). The fields available to query from will change depending on which data table is being accessed. The next task is to decide if the query should look for data that is equal, less than, greater than, not equal, or like (Figure 2.2, Letter B) the value entered (Figure 2.2, Letter C).

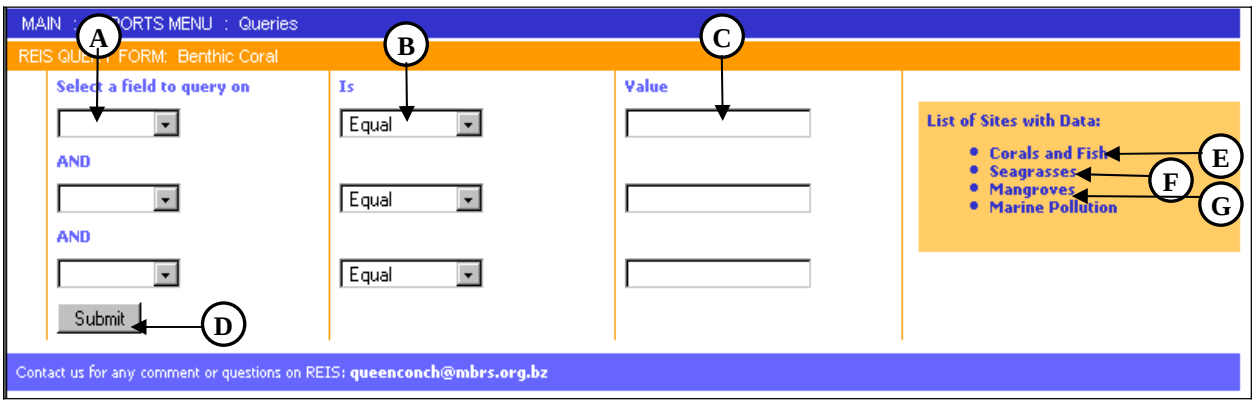


Figure 2.2 Sample Query

Legend 2.2 Legend for Figure 2.2

	Description
A	Select a field to query from.
B	Select equal, less than, greater than, not equal, or like from the pull down menu
C	Enter the value
D	Select the submit button to execute the query
E	Select this link to access a list of sites with coral and fish data
F	Select this link to access a list of sites with seagrass data
G	Select this link to access a list of sites with mangrove data

Wildcards can be used in the value field only if Like is selected as the comparison operator. A wildcard character is a symbol that stands for one or more characters in text searches. The database supports two wildcards: "_" and "%". The wildcard "_" matches any single character. The wildcard "%" matches one or more of any characters. The following expressions will all find Belize:

1) Country Equal Belize
2) Country Like Belize
3) Country Like _elize
4) Country Like %lize

But not:

5) Country Like _lize
6) Country Equal %lize

The items in the query field (Figure 2.2 Letter A), are based on each report form. The code for the items is in the list is given in the pages following this section. Descriptions of the items are given in the reports sections. The items common to all the reports are:

1) Country – The country in which the site is located.
2) Location – The name of the geographic feature on which the site is located, such as Banco Chinchorro.
3) Ecosystem – The ecosystem as defined by the Manual of methods for the MBRS Synoptic Monitoring Program. Currently the values are Coral, Mangrove, and Seagrass.
4) Habitat – The habitat within the ecosystem as defined by the Manual of methods for the MBRS Synoptic Monitoring Program. Currently the habitats are Shallow Fore Reef, Shallow Back Reef, Deep Fore Reef, Coastal, and Fringing.
5) Site_id – The unique site identifier.
6) Survey_id – The unique identifier for each survey. This is not usually used by the user.
7) Startdate – The date the sampling was conducted, or in the case of timed interval sampling such as mangrove leaf litter and seagrass growth the date the interval started.
8) Transect – The transect or plot number.
9) Collector – The person doing the field work collecting the data.

The following example shows how to create a query to select all the benthic coral data for the country of Belize.

1) Access the coral and fish report menu page (Figure 2.1, Letter A).
2) Select the benthic data "queries" button (Figure 2.1.1, Letter A).

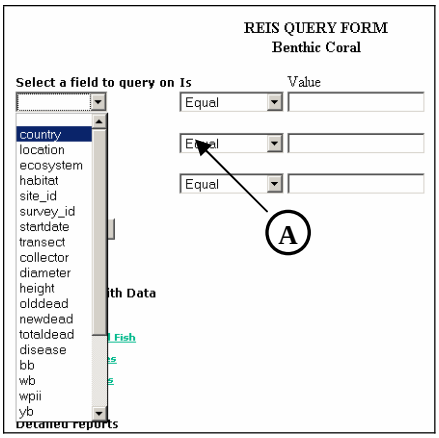


Figure 2.2a Selecting item to query on.

3) Select country from the **select a field to query on** menu (Figure 2.2a, Letter A).

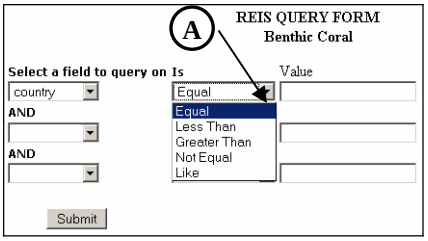


Figure 2.2b. Select comparison operator.

4) Select "Equal" from the pull down menu (Figure 2.2b, Letter A).

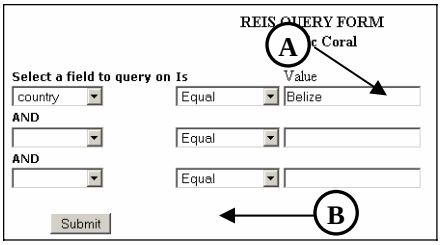


Figure 2.2c. Enter the value for comparison

5) Enter Belize in the value field (Figure 2.2c, Letter A).

6) Select the "submit" button (Figure 2.2c, Letter B).
7) An output report of benthic coral data should appear on the screen.

Up to three criteria can be used in querying the data. If the user wanted to further restrict the search parameters instead of selecting the "Submit" button in step 6 they would repeat steps 3 through 5, except using the second row of the query form. For example, if only data for Belize Deep Fore Reef environments was wanted the final query form would look like Figure 2.2d.

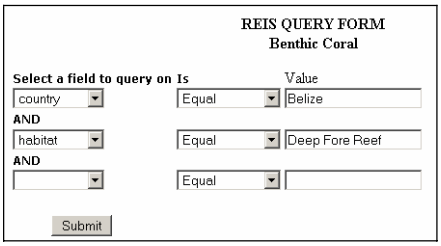


Figure 2.2d Query on two parameters.

Query Item Code List

Common for all Queries

Item	Code
Site ID	site_id
Date	startdate
Transect	transect
Person Collecting	collector
Supervisor	supervisor
Country	country
Location	location
Ecosystem	ecosystem
Habitat	habitat
Survey ID	Survey_id
Species Name	gen_spec

2.3.1 Mangrove Characterization/Zonation Report

Item	Code
Distance from Shore (m)	distance
Distance from Point (m)	pointdistance
DBH (cm)	dbh
Height (m)	height
quadrant	quadrant

2.3.2 Forest Structure Report

Item	Code
Position X	position_x
Position Y	position_y
Tree Number	tree
DBH (cm)	dbh
Proproot Height (cm)	proproot
Trunk Length (m)	trunklength
Tree Height (m)	treeheight
Basal Area (cm^2)	basalarea
Biomass (g) (Golly)	gbiomass
Biomass (g) (Cintron)	cbiomass

2.3.3 Forest Structure Seedling/Sapling Report

Item	Code
Subplot	subplot
Position X	position_x
Position Y	position_y
Seedling/sapling	sapling
DBH (cm)	dbh
Height (cm)	height
Live (Y/N)	live
Biomass (g)	biomass

2.3.4 Seedling/Sapling Biomass Report

Item	Code
Seedling/sapling	sapling
Height (cm)	height
Weight (g)	weight

2.3.5 Leaf Litter Report

Item	Code
End Date	enddate
Duration (days)	duration
Leaf Weight	leaf
Bract Weight	bract
Flower Weight	flower
Wood Weight	wood
Fruit Weight	fruit
Misc. Weight	misc
Total Weight	total

2.3.6 Interstitial Water Report

Item	Code
Depth (cm)	depth
Sediment Surface Exposed (Y/N)	sedexposed
Salinity (ppt)	salinity

2.4.1 Seagrass Growth Report

Item	Code
Quadrat	quadrat
New Vegetation	newleaf
Old Vegetation	oldleaf
Standing Vegetation	standing
Days	day
Productivity	productivity
turnover	turnover

2.4.2 Seagrass Biomass Report

Item	Code
Person Processing	processor
Core Replicate	replicate
Core Diameter (cm)	diameter
Core Depth (cm)	depth
Living Shoots	livingshoots
Thalassia Green Leaves (g)	tgrn
Thalassia Short Shoots (g)	tsht
Thalassia Rhizomes (g)	trhz
Thalassia Roots (g)	troot
Thalassia Dead Tissue (g)	tdead
Thalassia Above Ground Tissue (g)	tabove
Thalassia Below Ground Tissue (g)	tbelow
Thalassia A:B Ratio	tabratio
Thalassia Total Tissue (g)	ttotal
Thalassia Biomass (g/sq m)	tgsqm
Other Grass Green Tissue (g)	ogrn
Other Grass Nongreen Tissue (g)	ongrn
Other Grass Total (g)	ototal
Other Grass Biomass (g/sq m)	ogsqm
Fleshy Algae (g)	fa
Fleshy Algae Biomass (g/sq m)	fagsqm
Calcareous Algae Above Ground (g)	caabv
Calcareous Algae Below Ground (g)	cablw
Calcareous Algae A:B Ratio	caabratio
Calcareous Algae Total (g)	catotal
Calcareous Algae Biomass (g/sq m)	cagsqm

2.4.3 Thalassia Leaf Area Index Report

Item	Code
Shoot	shoot
Leaf	leaf
Tip	tip
Epis	epis
Length	lenght
Width	width
Area	area

2.3 Mangrove Reports

The mangrove and seagrass report menu (Figure 2.1.1) lists both the mangrove and seagrass reports available. Refer to section 2.4 for the specifics on the seagrass reports. The six mangrove reports available are characterization/zonation, forest structure, seedling/sapling, seedling/sapling biomass, interstitial water, and leaf litter. To access the reports for any of the mangrove data, the user must select the appropriate "query" button located to the right. Refer to Section 2.2 for details on accessing and executing a query.

2.3.1 Characterization/zonation

In order to access the existing mangrove characterization/zonation report, a query must first be selected. For instruction on creating a query, refer to section 2.2. Once the query is executed, a tabular view of the existing mangrove characterization/zonation data is presented, as shown in Figure 2.3.1. The items in this report are site id, date, transect, person collection, species name, distance from shore, distance from point, DBH, and height. Legend 2.3.1 contains item descriptions for the mangrove characterization/zonation report data.

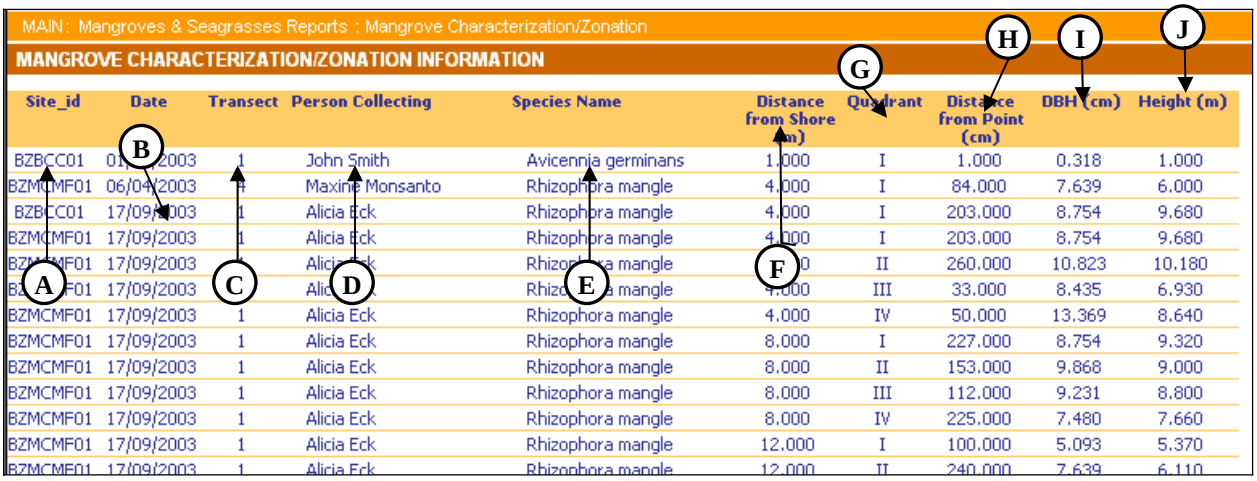


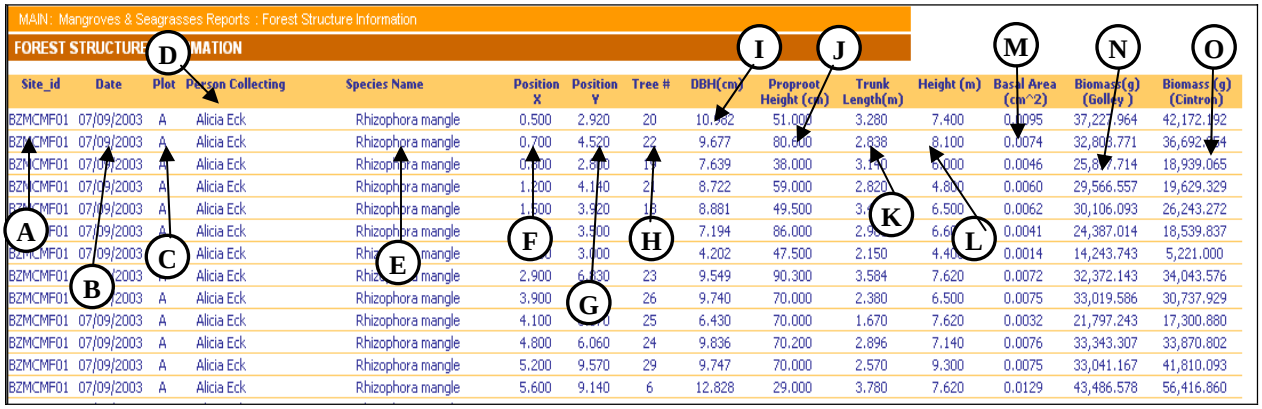
Figure 2.3.1 Mangrove characterization/zonation Report

Legend 2.3.1 Legend for Figure 2.3.1

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person Collecting	Name of the person that collected data.
E	Species Name	The name of the species.
F	Distance from Shore (m)	Distance from the origin of the centerline to the point.
G	Quadrant	The quadrant the tree is located in.
H	Distance from point (cm)	The distance from the tree to the point on the line.
I	DBH (cm)	The diameter of the tree at breast height.
J	Height (m)	The height of the tree.

2.3.2 Forest structure

To access the mangrove forest structure report, a query must be executed (See Section 2.2). The sample mangrove forest structure report (Figure 2.3.2) is shown without the navigation box due to the length of the report. The mangrove forest structure report items are site id, date, plot, person collecting, species name, position X, position Y, tree number, DBH, proproot height, trunk length, height, basal area, biomass (Golley) and biomass (Cintron). For item descriptions for this report, see Legend 2.3.2.



Site_id	Date	Plot	Person Collecting	Species Name	Position X	Position Y	Tree #	DBH(cm)	Proproot Height (cm)	Trunk Length(m)	Height (m)	Basal Area (cm^2)	Biomass(g) (Golley)	Biomass(g) (Cintron)
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	0.500	2.920	20	10.982	51.000	3.280	7.400	0.0095	37,227.964	42,172.192
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	0.700	4.520	22	9.677	80.000	2.838	8.100	0.0074	32,803.771	36,692.754
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	0.800	2.800	17	7.639	38.000	3.140	6.000	0.0046	25,857.714	18,939.065
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	1.200	4.140	21	8.722	59.000	2.820	4.800	0.0060	29,566.557	19,629.329
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	1.300	3.920	18	8.881	49.500	3.[illegible]	6.500	0.0062	30,106.093	26,243.272
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	1.[illegible]	3.500	13	7.194	86.000	2.9[illegible]	6.6[illegible]	0.0041	24,387.014	18,539.837
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2.[illegible]	3.000	19	4.202	47.500	2.150	4.4[illegible]	0.0014	14,243.743	5,221.000
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2.900	6.430	23	9.549	90.300	3.584	7.620	0.0072	32,372.143	34,043.576
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	3.900	6.[illegible]	26	9.740	70.000	2.380	6.500	0.0075	33,019.586	30,737.929
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	4.100	6.[illegible]	25	6.430	70.000	1.670	7.620	0.0032	21,797.243	17,300.880
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	4.800	6.060	24	9.836	70.200	2.896	7.140	0.0076	33,343.307	33,870.802
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	5.200	9.570	29	9.747	70.000	2.570	9.300	0.0075	33,041.167	41,810.093
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	5.600	9.140	6	12.828	29.000	3.780	7.620	0.0129	43,486.578	56,416.860

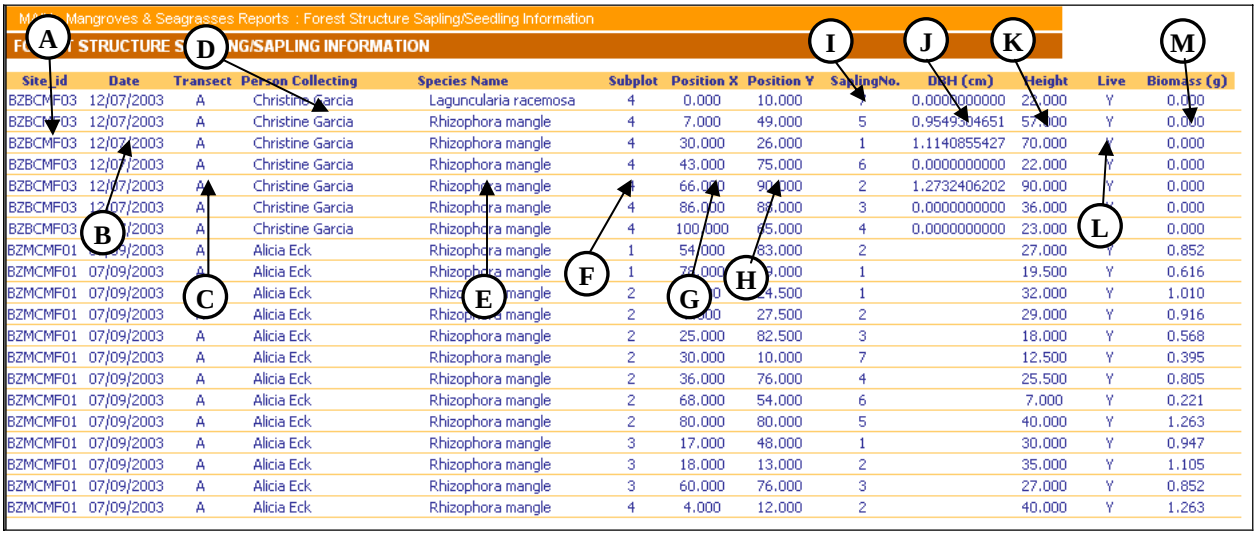
Figure 2.3.2 Forest Structure Report

Legend 2.3.2 Legend for Figure 2.3.2

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Plot	The sample area.
D	Person Collecting	Name of the person that collected data.
E	Species Name	The name of the species.
F	Position X	The X location of the tree in relation to the corner of the plot.
G	Position Y	The Y location of the tree in relation to the corner of the plot.
H	Tree Number	The number of the tree within the plot.
I	DBH (cm)	The diameter of the tree at breast height in centimeters.
J	Proproot Height (cm)	The height of the prop root in centimeters.
K	Trunk Length (m)	The length of the trunk in meters.
L	Tree Height (m)	The height of the tree in meters.
M	Basal Area (cm^2)	The cross sectional area at the point where dbh was measured.
N	Biomass (g) (Golley)	The calculated biomass of tree based on dbh (Golley et al 1962).
O	Biomass (g) (Cintron)	The calculated biomass of tree based on Citron and Shaeffer Novelli (1984).

2.3.3 Seedling/Sapling

To access the mangrove forest seedling/sapling report, a query must be executed (Section 2.2). The sample mangrove forest seedling/sapling report (Figure 2.3.3) is shown without the navigation box due to the length of the report. The items shown are site id, date, transect, person collecting, species name, subplot, position x, position y, sapling number, DBH, height, live and biomass. These items are described in Legend 2.3.3.



Mangroves & Seagrasses Reports : Forest Structure Sapling/Seedling Information

STRUCTURE S NG/SAPLING INFORMATION

Site_id	Date	Transect	Person Collecting	Species Name	Subplot	Position X	Position Y	SaplingNo.	DBH (cm)	Height	Live	Biomass (g)
BZBCMF03	12/07/2003	A	Christine Garcia	Laguncularia racemosa	4	0.000	10.000	7	0.0000000000	25.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	7.000	49.000	5	0.9549304651	57.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	30.000	26.000	1	1.1140855427	70.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	43.000	75.000	6	0.0000000000	22.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	66.000	91.000	2	1.2732406202	90.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	86.000	89.000	3	0.0000000000	36.000	Y	0.000
BZBCMF03	12/07/2003	A	Christine Garcia	Rhizophora mangle	4	100.000	65.000	4	0.0000000000	23.000	Y	0.000
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	1	54.000	83.000	2		27.000	Y	0.852
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	1	78.000	9.000	1		19.500	Y	0.616
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	0	24.500	1		32.000	Y	1.010
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	0	27.500	2		29.000	Y	0.916
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	25.000	82.500	3		18.000	Y	0.568
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	30.000	10.000	7		12.500	Y	0.395
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	36.000	76.000	4		25.500	Y	0.805
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	68.000	54.000	6		7.000	Y	0.221
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	2	80.000	80.000	5		40.000	Y	1.263
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	3	17.000	48.000	1		30.000	Y	0.947
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	3	18.000	13.000	2		35.000	Y	1.105
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	3	60.000	76.000	3		27.000	Y	0.852
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	4	4.000	12.000	2		40.000	Y	1.263

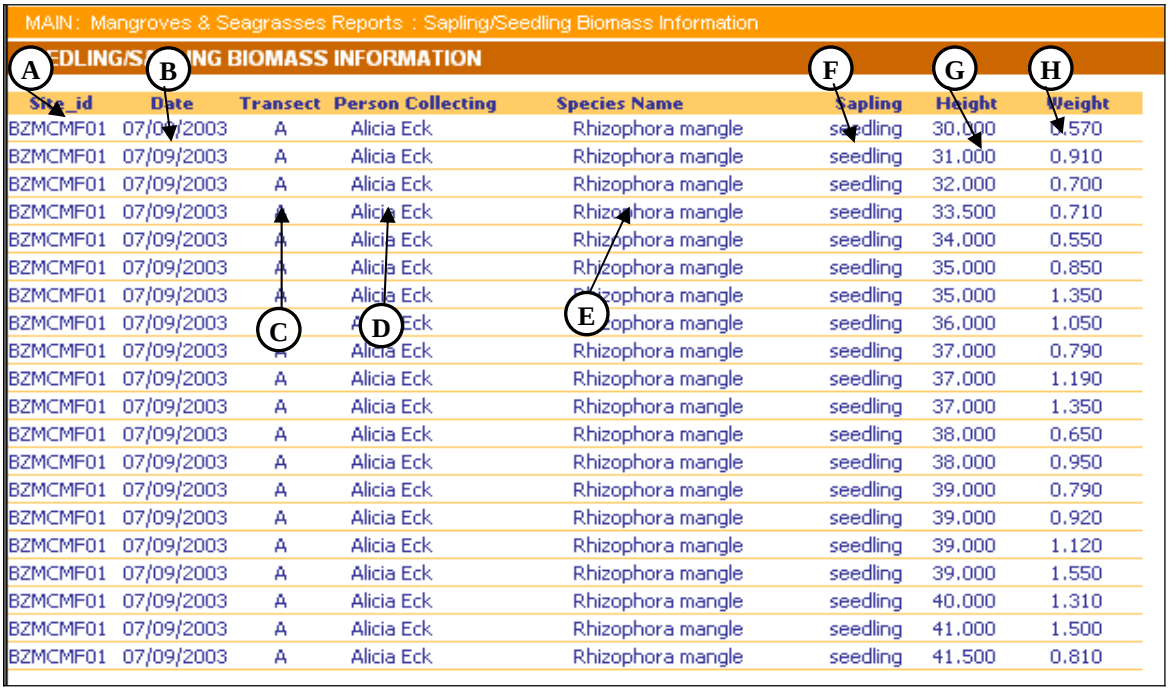
Figure 2.3.3 Forest structure seedling/sapling report

Legend 2.3.3 Legend for Figure 2.3.3

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person Collecting	Name of the person that collected data.
E	Species Name	The species name of the seedling/sapling.
F	Subplot	The subplot ID.
G	Position X	The X location of the seedling/sapling in relation to the corner of the plot.
H	Position Y	The Y location of the seedling/sapling in relation to the corner of the plot.
I	Seedling/Sapling	The seedling/sapling number in the plot.
J	DBH (cm)	The diameter of the seedling/sapling at breast height.
K	Height (cm)	The height of the seedling/sapling.
L	Live (Y/N)	Indicate whether the seedling/sapling is alive with a Y for yes and a N for no.
M	Biomass (g)	The seedling/sapling biomass in grams.

2.3.4 Seedling/Sapling biomass

To access the mangrove forest seedling/sapling biomass report (Figure 2.3.4), a query must be executed (Section 2.2). The items shown are site id, date, transect, person collecting, species name, seedling/sapling, height, and weight. These items are described in Legend 2.3.4.



Site_id	Date	Transect	Person Collecting	Species Name	Sapling	Height	Weight
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	30.000	0.570
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	31.000	0.910
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	32.000	0.700
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	33.500	0.710
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	34.000	0.550
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	35.000	0.850
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	35.000	1.350
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	36.000	1.050
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	37.000	0.790
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	37.000	1.190
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	37.000	1.350
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	38.000	0.650
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	38.000	0.950
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	39.000	0.790
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	39.000	0.920
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	39.000	1.120
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	39.000	1.550
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	40.000	1.310
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	41.000	1.500
BZMCMF01	07/09/2003	A	Alicia Eck	Rhizophora mangle	seedling	41.500	0.810

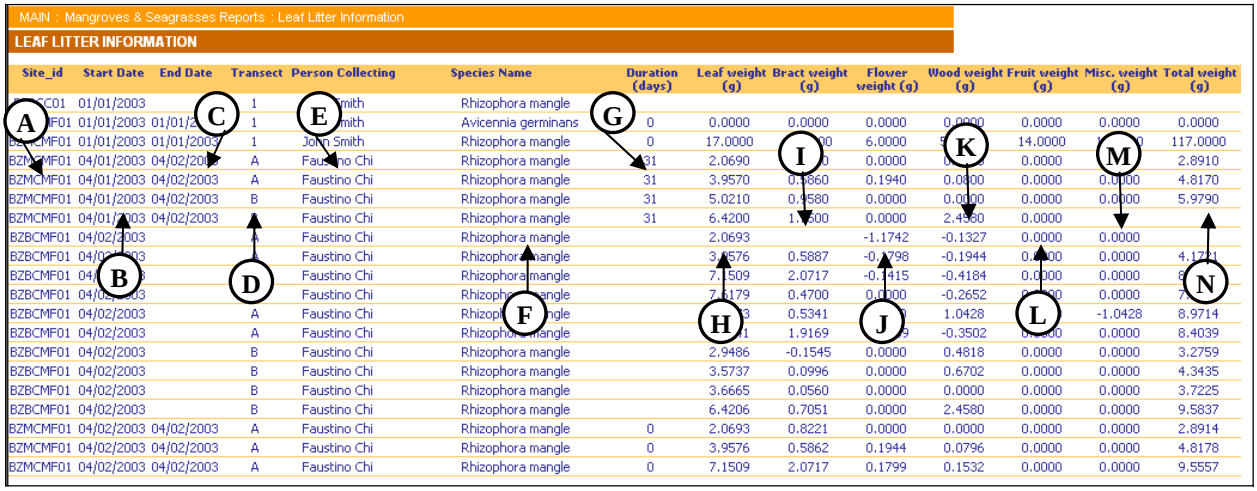
Figure 2.3.4 Seedling/sapling biomass report

Legend 2.3.4 Legend for Figure 2.3.4

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person Collecting	Name of the person that collected data.
E	Species Name	The species name of the seedling/sapling.
F	Seedling /Sapling	The seedling/sapling number in the plot.
G	Height (cm)	The height of the seedling/sapling.
H	Weight (g)	Weight of the seedling/sapling in grams.

2.3.5 Leaf litter

To access the mangrove forest leaf litter report, a query must be executed (Section 2.2). The sample mangrove forest leaf litter report (Figure 2.3.5) is shown without the navigation box due to the length of the report. The items included are site id, start date, end date, transect, person collecting, species name, duration, leaf weight, bract weight, flower weight, wood weight, fruit weight, misc. weight, and total weight. These items are described in Legend 2.3.5.



MAIN : Mangroves & Seagrasses Reports : Leaf Litter Information

LEAF LITTER INFORMATION

Site_id	Start Date	End Date	Transect	Person Collecting	Species Name	Duration (days)	Leaf weight (g)	Bract weight (g)	Flower weight (g)	Wood weight (g)	Fruit weight (g)	Misc. weight (g)	Total weight (g)
BZBCC01	01/01/2003		1	Smith	Rhizophora mangle								
BZBCMF01	01/01/2003	01/01/2003	1	Smith	Avicennia germinans	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
BZBCMF01	01/01/2003	01/01/2003	1	John Smith	Rhizophora mangle	0	17.0000	[illegible]	6.0000	[illegible]	14.0000	[illegible]	117.0000
BZBCMF01	04/01/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	31	2.0690	[illegible]	0.0000	[illegible]	0.0000	0.0000	2.8910
BZBCMF01	04/01/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	31	3.9570	0.4860	0.1940	0.0800	0.0000	0.0000	4.8170
BZBCMF01	04/01/2003	04/02/2003	B	Faustino Chi	Rhizophora mangle	31	5.0210	0.4580	0.0000	0.0000	0.0000	0.0000	5.9790
BZBCMF01	04/01/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	31	6.4200	1.4500	0.0000	2.4580	0.0000		
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		2.0693		-1.1742	-0.1327	0.0000	0.0000	
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		3.9576	0.5887	-0.1798	-0.1944	0.0000	0.0000	4.1721
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		7.1509	2.0717	-0.1415	-0.4184	0.0000	0.0000	8.1799
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		7.6179	0.4700	0.0000	-0.2652	0.0000	0.0000	7.8227
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		2.0693	0.5341	0.0000	1.0428	0.0000	-1.0428	8.9714
BZBCMF01	04/02/2003		A	Faustino Chi	Rhizophora mangle		3.9571	1.9169	0.1939	-0.3502	0.0000	0.0000	8.4039
BZBCMF01	04/02/2003		B	Faustino Chi	Rhizophora mangle		2.9486	-0.1545	0.0000	0.4818	0.0000	0.0000	3.2759
BZBCMF01	04/02/2003		B	Faustino Chi	Rhizophora mangle		3.5737	0.0996	0.0000	0.6702	0.0000	0.0000	4.3435
BZBCMF01	04/02/2003		B	Faustino Chi	Rhizophora mangle		3.6665	0.0560	0.0000	0.0000	0.0000	0.0000	3.7225
BZBCMF01	04/02/2003		B	Faustino Chi	Rhizophora mangle		6.4206	0.7051	0.0000	2.4580	0.0000	0.0000	9.5837
BZBCMF01	04/02/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	0	2.0693	0.8221	0.0000	0.0000	0.0000	0.0000	2.8914
BZBCMF01	04/02/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	0	3.9576	0.5862	0.1944	0.0796	0.0000	0.0000	4.8178
BZBCMF01	04/02/2003	04/02/2003	A	Faustino Chi	Rhizophora mangle	0	7.1509	2.0717	0.1799	0.1532	0.0000	0.0000	9.5557

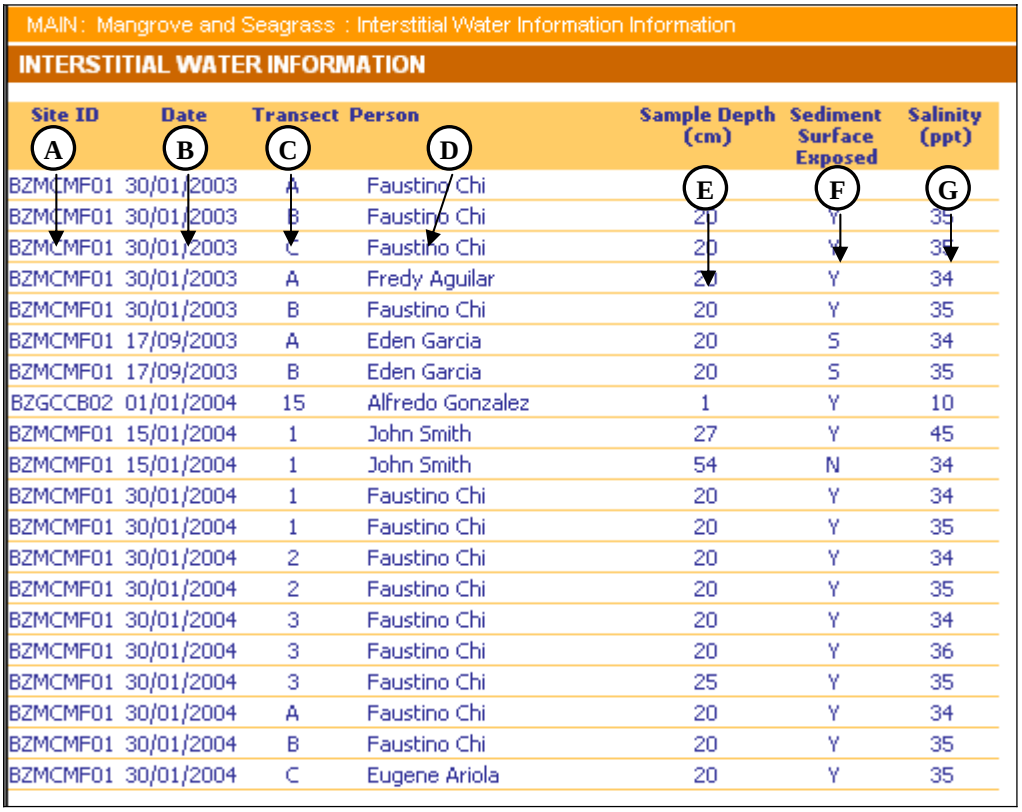
Figure 2.3.5 Leaf litter report

Legend 2.3.5 Legend for Figure 2.3.5

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Start Date	The date the .monitoring period was started
C	End Date	The date the data was collected.
D	Transect	The transect where the data was collected.
E	Person Collecting	Name of the person that collected data.
F	Species Name	The name of the species.
G	Duration (days)	The duration of the sample interval.
H	Leaf weight	The weight of the leaves.
I	Bract weight	The weight for bract.
J	Flower weight	The weight for flowers.
K	Wood weight	The weight for wood.
L	Fruit weight	The weight for fruit.
M	Misc. Weight	The weight for miscellaneous material.
N	Total Weight	The total weight of all components.

2.3.6 Interstitial water

To access the interstitial water report (Figure 2.3.6), a query must be executed (Section 2.2). The items shown on the report are depth, sediments surface exposure, and salinity. These items are described in Legend 2.3.6.



MAIN: Mangrove and Seagrass : Interstitial Water Information Information

INTERSTITIAL WATER INFORMATION

Site ID (A)	Date (B)	Transect (C)	Person (D)	Sample Depth (cm) (E)	Sediment Surface Exposed (F)	Salinity (ppt) (G)
BZMCMF01	30/01/2003	A	Faustino Chi	20	Y	35
BZMCMF01	30/01/2003	B	Faustino Chi	20	Y	35
BZMCMF01	30/01/2003	C	Faustino Chi	20	Y	35
BZMCMF01	30/01/2003	A	Fredy Aguilar	20	Y	34
BZMCMF01	30/01/2003	B	Faustino Chi	20	Y	35
BZMCMF01	17/09/2003	A	Eden Garcia	20	S	34
BZMCMF01	17/09/2003	B	Eden Garcia	20	S	35
BZGCCB02	01/01/2004	15	Alfredo Gonzalez	1	Y	10
BZMCMF01	15/01/2004	1	John Smith	27	Y	45
BZMCMF01	15/01/2004	1	John Smith	54	N	34
BZMCMF01	30/01/2004	1	Faustino Chi	20	Y	34
BZMCMF01	30/01/2004	1	Faustino Chi	20	Y	35
BZMCMF01	30/01/2004	2	Faustino Chi	20	Y	34
BZMCMF01	30/01/2004	2	Faustino Chi	20	Y	35
BZMCMF01	30/01/2004	3	Faustino Chi	20	Y	34
BZMCMF01	30/01/2004	3	Faustino Chi	20	Y	36
BZMCMF01	30/01/2004	3	Faustino Chi	25	Y	35
BZMCMF01	30/01/2004	A	Faustino Chi	20	Y	34
BZMCMF01	30/01/2004	B	Faustino Chi	20	Y	35
BZMCMF01	30/01/2004	C	Eugene Ariola	20	Y	35

Figure 2.3.6. Interstitial water report.

Legend 2.3.6 Legend for Figure 2.3.6

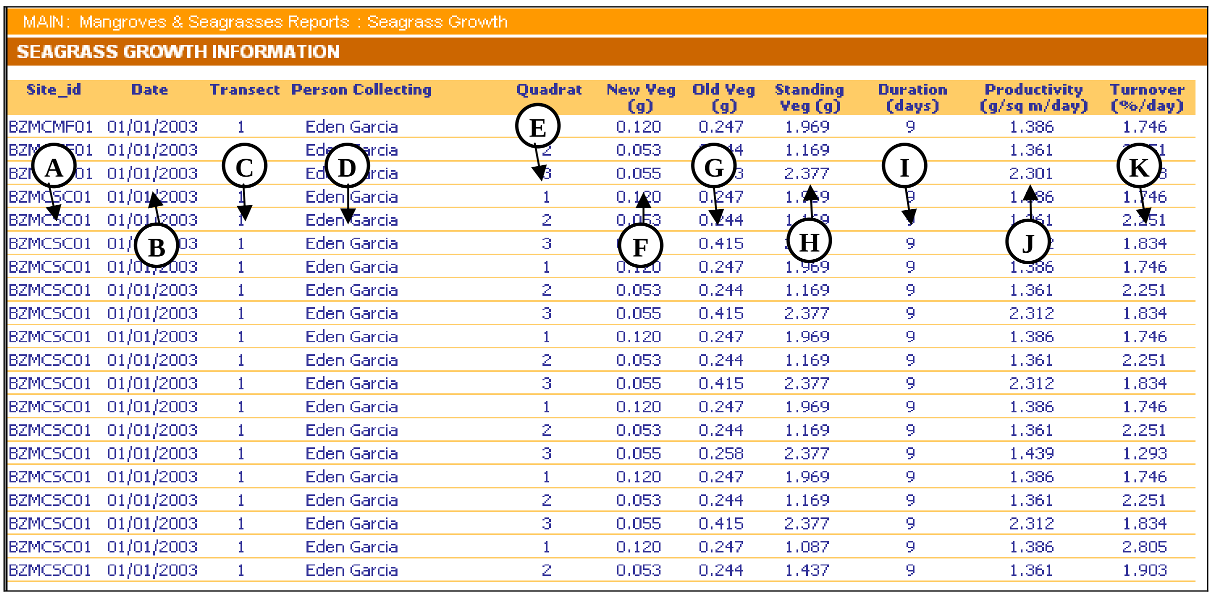
	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Start Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person Collecting	Name of the person that collected data.
E	Depth (cm)	The depth in centimeters at which the sample was collected.
F	Sediment Surface Exposed (Y/N)	Identifies whether the sediment surface was exposed (above the water level) at the time of the sample was collected.
G	Salinity (ppt)	The salinity of the water in parts per thousand.

2.4 Seagrass Reports

The mangrove and seagrass report menu (Figure 2.1.1) lists both the mangrove and seagrass reports available. Refer to section 2.3 for the specifics on the mangrove reports. The three seagrass reports available are seagrass growth, seagrass biomass, and seagrass leaf area index. To access the reports for any of the seagrass data, the user must select the appropriate “query” button located to the right. Refer to Section 2.2 for details on accessing and executing a query.

2.4.1 Seagrass Growth

To access the seagrass growth report, a query must be executed (Section 2.2). The sample seagrass growth report (Figure 2.4.1) is shown without the navigation box due to the length of the report. The items are site id, date, transect, person collecting, quadrant, new veg, old veg, standing veg, duration, productivity, and turnover. These items are described in Legend 2.4.1.



MAIN: Mangroves & Seagrasses Reports : Seagrass Growth

SEAGRASS GROWTH INFORMATION

Site_id	Date	Transect	Person Collecting	Quadrat	New Veg (g)	Old Veg (g)	Standing Veg (g)	Duration (days)	Productivity (g/sq m/day)	Turnover (%/day)
BZMCMF01	01/01/2003	1	Eden Garcia	[illegible]	0.120	0.247	1.969	9	1.386	1.746
[illegible]	01/01/2003	[illegible]	[illegible]	2	0.053	[illegible]	1.169	[illegible]	1.361	[illegible]
[illegible]	01/01/2003	[illegible]	[illegible]	3	0.055	[illegible]	2.377	[illegible]	2.301	[illegible]
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.969	9	1.386	1.746
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.169	[illegible]	1.361	2.251
BZMCSC01	[illegible]	1	Eden Garcia	3	[illegible]	0.415	[illegible]	9	[illegible]	1.834
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.969	9	1.386	1.746
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.169	9	1.361	2.251
BZMCSC01	01/01/2003	1	Eden Garcia	3	0.055	0.415	2.377	9	2.312	1.834
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.969	9	1.386	1.746
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.169	9	1.361	2.251
BZMCSC01	01/01/2003	1	Eden Garcia	3	0.055	0.415	2.377	9	2.312	1.834
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.969	9	1.386	1.746
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.169	9	1.361	2.251
BZMCSC01	01/01/2003	1	Eden Garcia	3	0.055	0.258	2.377	9	1.439	1.293
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.969	9	1.386	1.746
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.169	9	1.361	2.251
BZMCSC01	01/01/2003	1	Eden Garcia	3	0.055	0.415	2.377	9	2.312	1.834
BZMCSC01	01/01/2003	1	Eden Garcia	1	0.120	0.247	1.087	9	1.386	2.805
BZMCSC01	01/01/2003	1	Eden Garcia	2	0.053	0.244	1.437	9	1.361	1.903

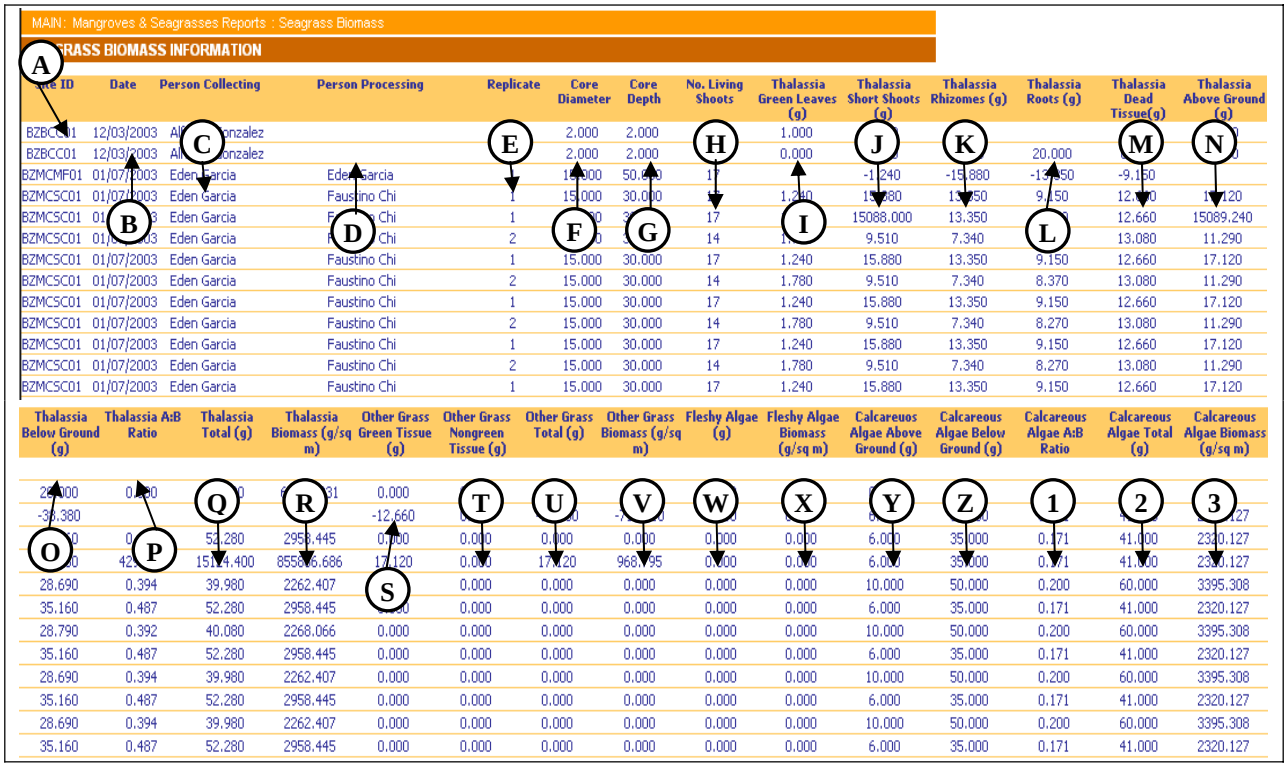
Figure 2.4.1 Seagrass growth report

Legend 2.4.1 Legend for Figure 2.4.1

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Transect	The transect where the data was collected.
D	Person Collecting	Name of the person that collected data.
E	Quadrat	The number quadrat where the monitoring occurred.
F	New Vegetation	The weight of the new leaves.
G	Old Vegetation	The weight the new growth on old leaves.
H	Standing Vegetation	The weight of the old standing crop.
I	Duration	The duration of the sampling interval in days.
J	Productivity	The amount of new material produced in g/sqm/day.
K	Turnover	The turnover rate in %/day.

2.4.2 Seagrass Biomass

To access the seagrass biomass report (Figure 2.4.2) a query must be executed (Section 2.2). The items are site id, date, transect, person collecting, replicate, core diameter, core depth, no living shoots, seagrass fraction, and weight. These items are described in Legend 2.4.2.



Site ID	Date	Person Collecting	Person Processing	Replicate	Core Diameter	Core Depth	No. Living Shoots	Thalassia Green Leaves (g)	Thalassia Short Shoots (g)	Thalassia Rhizomes (g)	Thalassia Roots (g)	Thalassia Dead Tissue(g)	Thalassia Above Ground (g)
BZBCC01	12/03/2003	Al[illegible]onzalez			2.000	2.000		1.000					
BZBCC01	12/03/2003	Al[illegible]onzalez			2.000	2.000		0.000			20.000		
BZMCMF01	01/07/2003	Eden Garcia	Eden Garcia	1	15.000	50.000	17		-1.240	-15.880	-13.350	-9.150	
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15.880	13.350	9.150	12.660	17.120
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15088.000	13.350	9.150	12.660	15089.240
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	2	15.000	30.000	14	1.780	9.510	7.340	8.270	13.080	11.290
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15.880	13.350	9.150	12.660	17.120
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	2	15.000	30.000	14	1.780	9.510	7.340	8.370	13.080	11.290
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15.880	13.350	9.150	12.660	17.120
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	2	15.000	30.000	14	1.780	9.510	7.340	8.270	13.080	11.290
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15.880	13.350	9.150	12.660	17.120
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	2	15.000	30.000	14	1.780	9.510	7.340	8.270	13.080	11.290
BZMCSC01	01/07/2003	Eden Garcia	Faustino Chi	1	15.000	30.000	17	1.240	15.880	13.350	9.150	12.660	17.120

Thalassia Below Ground (g)	Thalassia A:B Ratio	Thalassia Total (g)	Thalassia Biomass (g/sq m)	Other Grass Green Tissue (g)	Other Grass Nongreen Tissue (g)	Other Grass Total (g)	Other Grass Biomass (g/sq m)	Fleshy Algae (g)	Fleshy Algae Biomass (g/sq m)	Calcareous Algae Above Ground (g)	Calcareous Algae Below Ground (g)	Calcareous Algae A:B Ratio	Calcareous Algae Total (g)	Calcareous Algae Biomass (g/sq m)
28.690	0.394	39.980	2262.407	0.000	0.000	0.000	0.000	0.000	0.000	10.000	50.000	0.200	60.000	3395.308
35.160	0.487	52.280	2958.445	0.000	0.000	0.000	0.000	0.000	0.000	6.000	35.000	0.171	41.000	2320.127
28.790	0.392	40.080	2268.066	0.000	0.000	0.000	0.000	0.000	0.000	10.000	50.000	0.200	60.000	3395.308
35.160	0.487	52.280	2958.445	0.000	0.000	0.000	0.000	0.000	0.000	6.000	35.000	0.171	41.000	2320.127
28.690	0.394	39.980	2262.407	0.000	0.000	0.000	0.000	0.000	0.000	10.000	50.000	0.200	60.000	3395.308
35.160	0.487	52.280	2958.445	0.000	0.000	0.000	0.000	0.000	0.000	6.000	35.000	0.171	41.000	2320.127
28.690	0.394	39.980	2262.407	0.000	0.000	0.000	0.000	0.000	0.000	10.000	50.000	0.200	60.000	3395.308
35.160	0.487	52.280	2958.445	0.000	0.000	0.000	0.000	0.000	0.000	6.000	35.000	0.171	41.000	2320.127

Figure 2.4.2 Seagrass biomass report

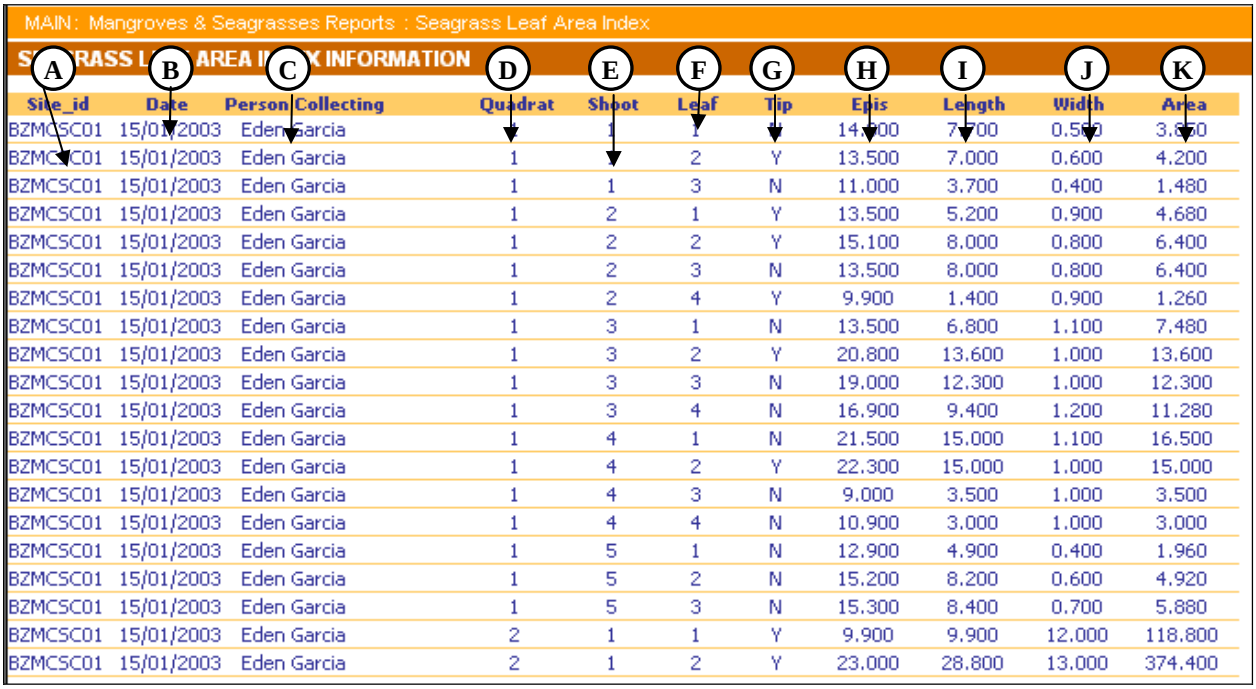
Legend 2.4.2 Legend for Figure 2.4.2

	Item Name	Item Description
A	Site ID	This is an identifier for the site.
B	Date	The date the data was collected.
C	Person Collecting	Name of the person that collected data.
D	Person Processing	Name of the person that processed the samples in the lab.
E	Core Replicate	The core replicate number.
F	Core Diameter (cm)	The diameter of the core in centimeters.
G	Core Depth (cm)	The depth of the core in centimeters.
H	Living Shoots	The number of living shoots in a core.
I	Thalassia Green Leaves (g)	The net weight for the green leaves in grams
J	Thalassia Short Shoots (g)	The net weight for the short shoots in grams.
K	Thalassia Rhizomes (g)	The net weight for the rhizomes in grams.
L	Thalassia Roots (g)	The net weight for the roots in grams.

M	Thalassia Dead Tissue (g)	The net weight for the dead tissue in grams.
N	Thalassia Above Ground (g)	The net weight for the above ground tissue in grams.
O	Thalassia Below Ground (g)	The net weight for the below ground tissue in grams.
P	Thalassia A:B Ratio	Ratio of the weight of above ground tissue to below ground tissue.
Q	Thalassia Total (g)	The total net weight of Thalassia.
R	Thalassia Biomass (g/sq m)	The biomass of Thalassia in grams per square meter.
S	Other Grass Green Tissue (g)	The net weight for green tissue from other grasses in grams.
T	Other Grass Nongreen Tissue (g)	The net weight for the nongreen tissue from other grasses in grams.
U	Other Grass Total	The total net weight of other grasses.
V	Other Grass Biomass (g/sq m)	The biomass of other grasses in grams per square meter.
W	Fleshy Algae (g)	The net weight for fleshy algae in grams.
X	Fleshy Algae Biomass (g/sq m)	The biomass of fleshy algae in grams per square meter.
Y	Calcareous Algae Above Ground (g)	The net weight for above ground calcareous algae in grams.
Z	Calcareous Algae Below Ground (g)	The net weight for the below ground calcareous algae in grams.
1	Calcareous Algae A:B Ratio	Ratio of the weight of above ground tissue to below ground tissue.
2	Calcareous Algae Total (g)	The total net weight of calcareous algae.
3	Calcareous Algae Biomass (g/sq m)	The biomass of calcareous algae in grams per square meter.

2.4.3 Seagrass leaf area index

To access the seagrass leaf area index report (Figure 2.4.3) a query must be executed (Section 2.2). The items are site id, date, person collecting, shoot, leaf, tip, epis, length, and width. These items are described in Legend 2.4.3.


MAIN: Mangroves & Seagrasses Reports : Seagrass Leaf Area Index

SEAGRASS LEAF AREA INDEX INFORMATION

A	B	C	D	E	F	G	H	I	J	K
Site_id	Date	Person Collecting	Quadrat	Shoot	Leaf	Tip	Epis	Length	Width	Area
BZMCSC01	15/01/2003	Eden Garcia	1	1	1	Y	14.000	7.000	0.500	3.500
BZMCSC01	15/01/2003	Eden Garcia	1	1	2	Y	13.500	7.000	0.600	4.200
BZMCSC01	15/01/2003	Eden Garcia	1	1	3	N	11.000	3.700	0.400	1.480
BZMCSC01	15/01/2003	Eden Garcia	1	2	1	Y	13.500	5.200	0.900	4.680
BZMCSC01	15/01/2003	Eden Garcia	1	2	2	Y	15.100	8.000	0.800	6.400
BZMCSC01	15/01/2003	Eden Garcia	1	2	3	N	13.500	8.000	0.800	6.400
BZMCSC01	15/01/2003	Eden Garcia	1	2	4	Y	9.900	1.400	0.900	1.260
BZMCSC01	15/01/2003	Eden Garcia	1	3	1	N	13.500	6.800	1.100	7.480
BZMCSC01	15/01/2003	Eden Garcia	1	3	2	Y	20.800	13.600	1.000	13.600
BZMCSC01	15/01/2003	Eden Garcia	1	3	3	N	19.000	12.300	1.000	12.300
BZMCSC01	15/01/2003	Eden Garcia	1	3	4	N	16.900	9.400	1.200	11.280
BZMCSC01	15/01/2003	Eden Garcia	1	4	1	N	21.500	15.000	1.100	16.500
BZMCSC01	15/01/2003	Eden Garcia	1	4	2	Y	22.300	15.000	1.000	15.000
BZMCSC01	15/01/2003	Eden Garcia	1	4	3	N	9.000	3.500	1.000	3.500
BZMCSC01	15/01/2003	Eden Garcia	1	4	4	N	10.900	3.000	1.000	3.000
BZMCSC01	15/01/2003	Eden Garcia	1	5	1	N	12.900	4.900	0.400	1.960
BZMCSC01	15/01/2003	Eden Garcia	1	5	2	N	15.200	8.200	0.600	4.920
BZMCSC01	15/01/2003	Eden Garcia	1	5	3	N	15.300	8.400	0.700	5.880
BZMCSC01	15/01/2003	Eden Garcia	2	1	1	Y	9.900	9.900	12.000	118.800
BZMCSC01	15/01/2003	Eden Garcia	2	1	2	Y	23.000	28.800	13.000	374.400

Figure 2.4.3 Seagrass Leaf Area Index Report

Legend 2.4.3 Legend for Figure 2.4.3

	Item Name	Item Description
A	Site_id	This is an identifier for the site.
B	Date	The date the data was collected.
C	Person Collecting	The name of the person who collected the data.
D	Quadrat	The quadrat where the sample was collected.
E	Shoot	The number of the shoot.
F	Leaf	The number of the leaf.
G	Tip	Y for yes and N for no if a tip was present.
H	Epis	Distance from base to first occurrence of the epiphytes.
I	Length	The length of the leaf.
J	Width	The width of the leaf.
K	Area	The area of the leaf in cm^2.